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OF THE
Michigan State Medical Society

ISSUED MONTHLY UNDER THE DIRECTION OF THE COUNCIL

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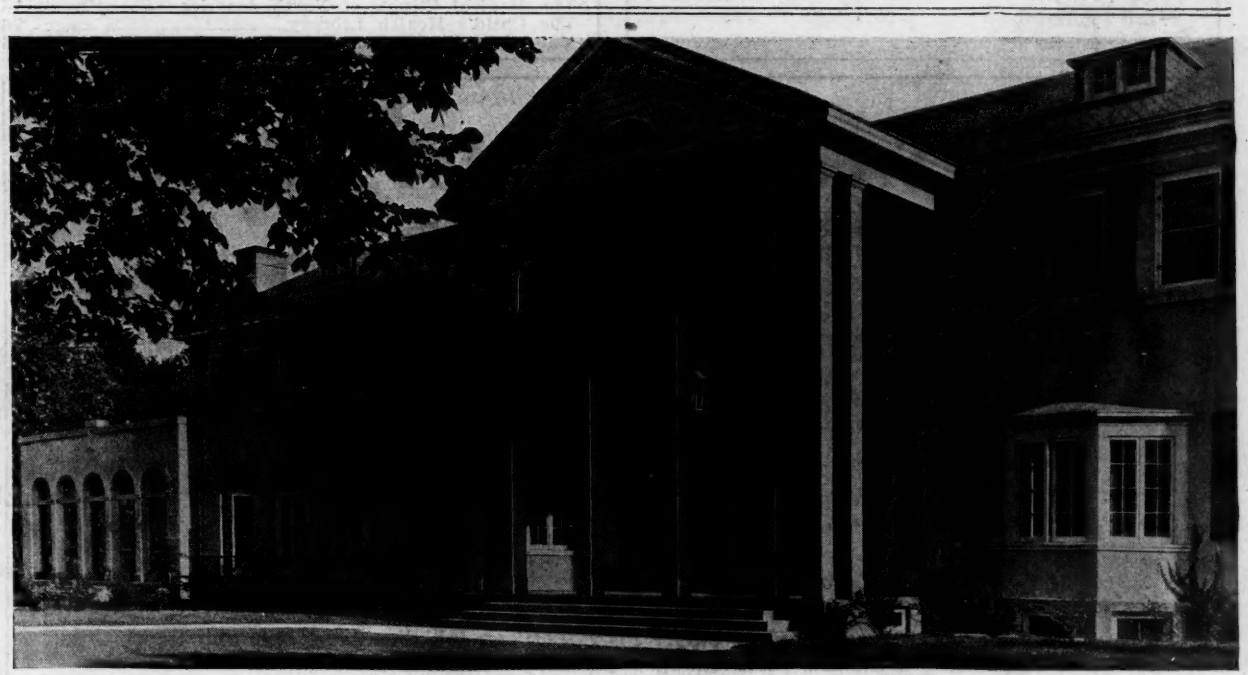

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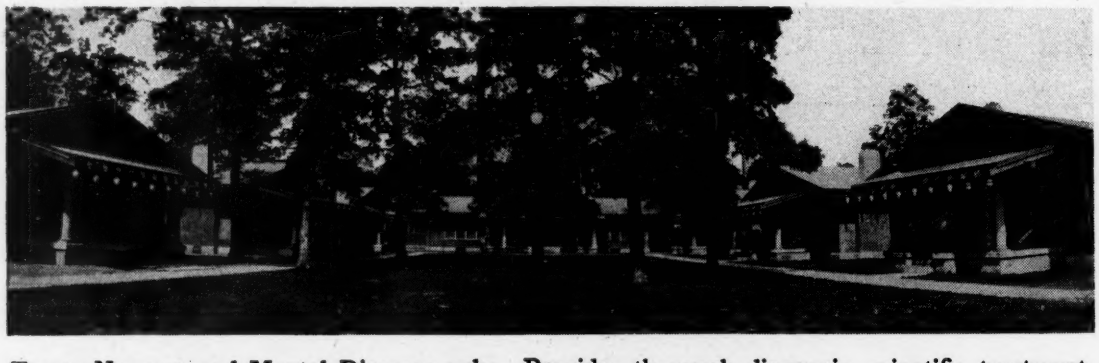

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Original Articles

SOME CONTRIBUTIONS OF CHEMISTRY TO THE ART AND SCIENCE OF MEDICINE*

H. B. LEWIS, PH. D.
ANN ARBOR, MICHIGAN

At the beginning of each academic year in this medical school, it is the custom for a member of the faculty to address the faculty and student body on some phase of medicine, usually on some phase of that branch of medical science which he represents, to point out recent advances, and to emphasize anew important older aspects. This morning, as a representative of the chemical group in the medical sciences, I purpose to present to you briefly some considerations concerning the contributions of chemistry to medicine in the past, and to point out some lines along which advances may be expected within the next decade. If, in my discussion, I follow the tendency of those who have preceded me in former years and overemphasize, perhaps, the importance of the contributions in my own field of specialization, chemistry, and appear to minimize the contributions in other fields, I may, I trust, be pardoned. To every man in science who is worth his salt, his own field appears most important, most fascinating, and also most baffling. It is to those, who, in the words of the old negro dialect song of the period when ragtime was the prevalent form of popular melody, stand "outside lookin' in" that the solutions of the problems of science often appear simple, rather than those who are "inside lookin' out."

Paracelsus was among the first to recognize the relation of chemistry to medicine, and in those days when alchemy, the transmutation of the baser metals to gold, was the main goal of chemistry, declared that "the object of chemistry is not to make gold but to prepare medicines." But the chemistry of the seventeenth and eighteenth centuries was as crude as the medical science of that period and practitioners of that period looked with scorn on the possible contributions of the chemist to medicine. The conditions a century ago are well exemplified by a quotation from a well known medical writer, written in 1805. The author after discussing medical science and particularly medical education, thus pays his tribute to chemistry:

> "But none of the preliminary sciences has assumed so arrogant a place as chemistry. It is, indeed, a fact that chemistry explains certain appearances of the healthy as well as the diseased body, and is a guide to the preparation of various medicines; but it is incredible how often it has usurped the right of explaining all physiological and pathological phenomena, and how much it has distinguished itself by authorizing this or that medicine."

and again:

> "Chemistry should never attempt to offer an explanation of the abnormal performances of the functions in the diseased body, since it is so unsuccessful in explaining them in the healthy state. When it predicts what, according to its laws, must happen, then something quite different takes place; and if the vitality overmasters chemistry in the healthy body, how much more must it do so in the diseased, which is exposed to the influence of so many more unknown forces. And just as little should chemistry undertake to give a decision upon the suitableness or worthlessness of medicines, for it is altogether out of its sphere of vision to determine what is properly healing or hurtful, and it possesses no principles and no standard by which the healing efficacy of medicines, in different diseases can be measured or judged of." (Hahneman, Aesculapius in the Balance).

The beginnings in the modern field of research of physiological chemistry may be said to date from Liebig, the father of modern chemistry, whose contributions both to analytical and organic chemistry paved the way for the establishment of the first two independent laboratories and professorships in Physiological Chemistry at Tubingen in 1845 (held by Schlossberger and later by Hoppe-Seyler in 1861) and at Strassburg in 1872 (held by Hoppe-Seyler). I mention the establishment of these two pioneer laboratories abroad in order to point out

*An address delivered at the opening assembly of the Medical School of the University of Michigan on September 23, 1924.

R. M.

the similar rise of independent laboratories in this country. Prior to 1880, medical chemistry, as it was called, was descriptive and not dynamic, with little of value to contribute to medicine. In 1882, Russell H. Chittenden was appointed to the first independent professorship of Physiological Chemistry in this country, in the Sheffield Scientific School of Yale University, and the following year Dr. Victor C. Vaughan was appointed to a similar position here in this medical school. *So far as I have been able to discover, Professor Vaughan was the first man to hold a professorship in Physiological Chemistry, as we now understand the term, on a medical faculty in this country.* (Italics ours, Ed.) Under the leadership of these two able men, the importance of chemistry in medical education was rapidly recognized and the early conception of medical chemistry soon gave way to a dynamic conception, the idea of function. The older "medical chemistry" concerned itself chiefly with the detection of a few simple substances, of pathological interest mainly, in urine and the identification of the more common poisons. The idea of chemistry as an aid in the solution of the problems of dynamics of the normal organism is comparatively new. This development may be illustrated by a reference to a few fundamental problems which have in recent years engaged the attention of many workers and which will still remain unsolved, such as (1) autolysis, the relation of enzymes to endo-cellular processes, (2) the chemistry of the protein molecule in relation to absorption and circulation of this important food stuff, (3) the problem of the interrelationships between food stuffs, (4) the mechanism, considered from the chemical point of view of anaphylaxis, immunity to disease, natural and acquired, and of related phenomena, (5) the interrelation of function, that is, of the secretion of the cells and of one organ or tissue on the cells of a remote organ or tissue, the chemistry of the endocrine organs, (6) the chemistry of the reactions involved in the transmission of the nervous impulse through the delicate mechanism of the nerve cell.

The new and rapidly developing science of organic chemistry soon offered valuable aid, particularly in the studies of the chemistry of drugs, natural and synthetic, and more recently, within the last 15 years, the branch of analytical chemistry has contributed much to medical science, particularly to the diagnosis of the disease.

From among the many and varied phases of the application of chemistry to medicine, I have chosen for brief discussion, four, all of which have been or will be, in my opinion, far-reaching in their influence: (1) the role of chemistry in the development of synthetic drugs; (2) the application of chemical procedures to the isolation and purification of the active principles of glands, particularly of the glands of internal secretion; (3) the utilization of modern methods of micro-analysis as an aid in diagnosis and prognosis; (4) the development of the comparatively new science of nutrition.

The use of synthetic chemical products as drugs may be said to have developed in two stages: the first, the discovery, more or less accidentally in most cases, of the therapeutic value of well known chemical substances; and the second, the systematic attempt to develop organic compounds which should have definite desirable pharmacological action. Most striking of the examples of the first are the discovery of the anesthetic properties of ether and chloroform resulting in the utilization of anesthesia in surgical procedure. Ether has been known since its discovery by Valerius Cordus in 1540, but not until 1846 was its use as an anesthetic successfully acchieved by Morton in an operation by Dr. J. C. Warren at the Massachusetts General Hospital. Chloroform, for whose synthesis we are indebted to Liebig and others in 1831, was introduced into anesthesia by Sir James Simpson in Edinburgh in 1847. Within a year the administration of anesthetics was a universal practice throughout the civilized world. Dr. W. W. Keen, the dean of American surgeons thus comments on the effects of the introduction of anesthesia:

"It is a striking commentary on the immediate results of anesthesia to learn that, in the five years before the introduction of ether only 184 persons were willing to submit themselves to such a dreadful ordeal in the Massachusetts Hospital, an average of 37 operations per annum, or 3 per month. In the five years immediately succeeding its introduction, although the old horror could not be overcome, 487 operations, or almost 100 annually, were performed in the same hospital. During the last year (1898) in the same hospital 3,700 operations were performed."

Surgery, freed of its horrors, developed along lines hitherto undreamed of, and made those rapid strides which prepared it for the next great advance, the era of antisepsis, ushered in by utilization of phenol, another well known chemical, by Lord Lister in 1867. The further development of anesthesia is a matter of history and reference need only be made to the recent introduction of ethylene as a general anesthetic and to the use of the various local anesthetics, notably the synthetics, novocaine and butyn.

Not only surgery, but medicine profited by the more or less accidental discovery of the

therapeutic properties of well known chemicals. Chloral hydrate has been synthesized by Leibig in 1832, but it was not until 1869 that Liebreich, who thought it probable that in the organism chloral would be hydrolyzed to chloroform and thus act as an anesthetic, discovered the hypnotic action of chloral, at a time when morphine was the only known hypnotic. The later introduction of the ethyl-sulfones, sulfonal, trional, etc., by Baumann and Kast in 1888, and the discovery of the hypnotic urea derivatives, chief of which is veronal or barbital, by Emil Fischer, one of the greatest organic chemists of all time, and Von Mering in the early part of this century, are important milestones in the development of therapeutic chemicals.

The second phase, that of deliberate attempts to synthesize chemicals with definite pharmacological action, the modern chemotherapy, although foreshadowed by such work as that of Baumann and Fischer and Von Mering, already mentioned, was initiated by the brilliant work of Paul Ehrlich at the Royal Prussian Institution for Experimental Therapeutics at Frankfurt about 1905. Ehrlich was thus referred to by one of his teachers:

"When Robert Koch was shown through the laboratory at Breslau by one of the professors, his attention was called to a young student working at a desk covered with bottles of dyestuffs. 'There is our little Ehrlich,' said the professor, 'he is a first-rate stainer of tissues, but he will never pass his examination.' The prediction about the examinations came perilously near fulfillment; Ehrlich made bad flunks and it is hinted that he never would have received his degree had he not made a discovery, namely, the existence of the peculiar type of leucocyte which is known to us as the "plasma-cell." The faculty reasoned that it would be improper to keep so promising and original a worker indefinitely in an undergraduate position, and it is suspected that they mitigated the rigor of the examinations in order to relieve their own embarrassment." (Herter, C. A., Journ. Am. Med. Assn., LIV, 423, 1910).

The work of Ehrlich and others in the discovery of the various trypan dyes which destroyed the protozoan parasites of nagana and other diseases caused by trypanosomes, and of salvarsan, has stimulated countless other laboratories and workers in attempts to synthesize substances which will destroy lower forms without injury to the hosts. The problem of vital staining and tuberculosis is one of the most fascinating but as yet unsuccessfully solved of these problems.

In the field of the purification and isolation of the active principles of the glands of internal secretion, three advances may be noted particularly. Although the color reactions given by epinephrin, the active principle of the adrenal glands, had been known since the middle of the nineteenth century, it was not until 1901 that its isolation in crystalline form was accomplished independently by Takamine and Abel. In 1904 its structure was established and its synthesis was effected. In 1915, twenty years after the discovery of iodine in thyroid tissue by Baumann, Kendall announced the isolation of a substance, thyroxin, from thyroid, which on administration to patients, gave results similar to those with thyroid extract itself, and which is probably closely related to, if not actually, the active principle of the thyroid. The marked sensitivity of this substance to slight changes in the reaction of the medium, to carbon dioxide, and to other reagents hindered its isolation over a long period of years. The most recent of the achievements in work of this type, the successful preparation of the active principle of the pancreas, insulin, by the Toronto group and the improvements in its purification by a number of other workers is one of the best illustration of the wholesome trend in medicine today toward team work between chemist, physiologist and clinician. Whether the recent developments along the lines of the nature of the ovarian hormone by Allen, Doisy and their co-workers, will prove of equal importance with the other discoveries mentioned remains to be seen. A marked advance in the solution of the problem of the interrelations of the ductless glands will be made when the nature of their active principles is definitely known.

The changes in analytical procedure which have made possible the newer contributions of analytical chemistry to medical diagnosis have been well discussed by one who has himself been a leader in the development of these modern methods, Otto Folin, of the Harvard Medical School:

"In the science of biochemistry, too, we have had a constant succession of new methods, and a very important phase of the biochemical research of today is still the development of analytic technic. In the last few years there have been very great changes in the methods used for analysis of urine, while the advancement in the field of blood analysis has been even more remarkable.

The foremost characteristic of the successful modern analytic method is speed. With reference to the value of time, the biochemical investigator of today is no less keen than are the leaders in modern industry. Many of the older methods in use, say fifteen years ago, as, for example, Salkowski's method for uric acid, the Morner-Sjoquist method for urea, or the Schlosing method for ammonia, were accurate enough, but they were slow and they did not encourage the application of chemical methods to the study of clinical problems.

When a physician had to wait four days before he could learn how much ammonia a given urine contained, he did not bother himself very often about determinations of ammonia. And, as a matter of fact, this good old method for the determination of ammonia was so little used that investigators gradually forgot how the method must be employed in order to yield correct results.

Today any analytic method in urine analysis

which cannot be finished within less than two hours stands in need of further revision. Most of the common determinations in urine and blood will become from fifteen to thirty minute methods for single determinations, and also several determinations will be made with little extra expenditure of time.

Almost every material reduction in the time and labor required for a given determination is followed by an increase in the number of investigators who make researches based on that determination. But it is only when we come down to the very shortest of biochemical methods that they begin to appeal to clinicians, and it is, I think, no small triumph for the modern technic that clinicians have begun to compete with laboratory specialists in the fields of research suggested by these new methods."

"A second characteristic of modern analytic technic, as distinguished from the old, is the tendency to make the methods microchemical. Formerly a full twenty-four hour quantity of urine was scarcely large enough to permit a complete analysis. Today 10 cc. of urine is abundant for a determination of all the more common nitrogenous constituents. We still demand 24 hour samples of urine, and have gone on the assumption that we must have them to secure a satisfactory picture of the waste products; but we do not need them for the analysis. Indeed, many modern researches are based on analysis of urine representing periods much shorter than twenty-four hours." (Folin. O.—Mellon Lecture, University of Pittsburg, 1917).

This last aspect of the newer analytical procedure, the fact that its methods are largely microchemical, is particularly important in connection with blood analysis. For the older methods one to two hundred milliliters of blood were required for satisfactory results. Obviously, these methods were unsuitable for routine or repeated clinical studies. By the newer methods complete analysis of all the more important constituents of blood is possible with 5 milliliters of blood or even less if necessary. One illustration may be cited as an example of the importance of the data obtained by blood analysis in the diagnosis, prognosis and treatment of disease. Diabetes mellitus is characterized by glycosuria and hyperglycemia. In mild cases the hyperglycemia is not excessive, generally 0.2 to 0.3 per cent, but in severe cases figures much higher have been reported. Since this glycosuria is dependent upon hyperglycemia, it is apparent that the hyperglycemia is the more fundamental. In the later stages of the disease the sugar threshhold is frequently raised and the glycosuria consequently serves as a poor guide to the glycemia. It was ultimately recognized that hyperglycemia might still be present in a patient whose urine was sugar free. In such cases, blood sugar analysis is of the utmost importance. The recent discovery of insulin has markedly influenced the treatment of diabetes and the treatment is largely dependent on blood analysis for its efficiency. Had this discovery been made fiifteen years earlier, its clinical application would have been much more difficult, for the reason that at that time no reliable clinical method of blood sugar estimation was available. Blood sugar has served as the basis for the standardization of the insulin unit, and likewise as a guide to its therapeutic administration. The unit of insulin originally adopted was based on the amount required to lower the normal blood sugar of a one kilogram rabbit to 0.045 per cent, at which point convulsions generally occur. The injection of a unit of insulin into a diabetic will permit the utilization of from 1 to 4 grams additional carbohydrate depending upon the severity of the diabetes and the number of units given. The height of the blood sugar constitutes the most reliable guide to the administration of insulin.

In this connection a word of caution as to the utilization of these micro methods and interpretation of the results. A large proportion of those who profit most by their use are busy practitioners who have considered their own time too valuable to permit them to acquire personal proficiency in these methods. Hence, they hire technicians to do the work without themselves being qualified to judge of the quality of the work.

"There is a legitimate and important use for technical assistants in the innumerable little laboratories springing up in connection with private and with hospital practice of medicine, but it seems to me extremely important that this use should conform to some reasonably honest standard of responsibility. The physician should know at least as well as his technician each and every kind of determination that the technician makes for him. Every method goes wrong now and then, and the physician who is as helpless as the technician when something does seem to be wrong has but meager qualifications for the work he is trying to do." (Folin).

One of the most important functions of our laboratory training in chemistry in the medical school is, in my opinion, not to make trained chemists or technicians of our medical students, but to seek to instill in them some critical judgment so that they are capable of discrimination between good and poor laboratory work. The fundamentals of good analytical technic, neatness, accuracy and good judgment, can be acquired by every medical student. Then and only then can he appreciate and demand intelligently a high type of technical assistance in his chemical diagnotic work. Then we will be spared the only too common spectacle of the clinician who confidently demands a complete quantitative blood analysis in the same time required for a quantitative test for sugar or albumin in urine.

The problems of nutrition have quite properly constituted a subject of pertinent interest which has engaged the attention of man

from early times. The study of metabolism of the balance between intake of food and output of excretory products has been greatly stimulated in recent years by the introduction of relatively simple apparatus for the clinical determination of basal metabolism, but the interest of man was early directed toward this interchange of products. Sanctorius in his "De medicina statica aphorismi" published in Venice in 1614 tells of many experiments upon himself. In an old cut he is represented as sitting in a chair suspended from a large steelyard. He was accustomed to determine his weight previous to each meal and then weighed the steelyard so as to counterbalance the additional food he proposed to eat. When the chair dipped, this signified the end of his repast. Some such automatic device should make a fortune for its ingenious inventor in these days of dieting, calories, and general overplus of weight among our most prominent citizens. The studies of Sanctorius are part of the earliest records of attempts to measure accurately food consumption.

The modern era may be said to have been opened in 1780 by Lavosier's demonstration of the identity of respiration with combustion. Since that time the chemist has gone step by step, with the physiologist in elucidating the normal operations of the first and most efficient internal combustion engine, the human body. Thermo-chemistry is the foundation of nutrition and dietetics.

One of the most important advances in the field of nutrition was made in the middle of the 19th cetnury when Voit announced and proved experimentally the principle now known as the nitrogen balance, the fact that in the adult organism protein is not stored over any considerable period of time and that the nitrogen of the protein element in the food is eliminated promptly and efficiently by the kidneys as urea. Normally the nitrogen of the food equals the nitrogen of the excreta, mainly urinary and fecal nitrogen. If protein is not stored beyond the daily requirements of the individual, what is the consequence, if any, of excessive ingestion of protein? The superior flavor of most protein foods, the traditions of good red meat, handed down from our Anglo-Saxon ancestors, have combined to make protein foods the central figure in man's dietary around which the other foods are grouped. "But while protein foods occupy this commanding position, it is not necessary or desirable that they should exceed the other food stuffs in amount or indeed approach them in quantity. We must ever be mindful of the fact so many times expressed, that protein does not undergo complete oxidation in the body to simple gaseous products like the non-nitrogenous foods, but that there is left behind a residue of non-combustible matter, solid oxidation products, which are not so easily disposed of." (Chittenden). The condition and its possible dangers are thus picturesquely expressed by Curtis. "The combustion of proteid within the organism yields a solid ash which must be raked down by the liver and thrown out by the kidneys. Now when this task gets to be over-laborious, the laborers are likely to go on a strike. The grate, then is not properly raked; clinkers form and slowly the smothered fire dulls and dies." Even though economic conditions did not counsel restriction of the protein in the diet, physiological consideration would tend to do so.

With the advent of the white rat, an animal unusually well adapted to nutrition studies because of its small size, resistance to infection, and disposition to eat almost any food regardless of palatibility, the interest in the problems of nutrition has shifted to the study of the newly discovered vitamins and their role in health and disease and the older cautions of Chittenden and others as to the evil effects of over-indulgence in protein food have been forgotten. The doctrine that an excess of a valuable food, like protein, is not injurious, gained credence. Although with other substances important in nutrition, as for example, sodium chloride, calcium salts, etc., we have clearly recognized the deleterious effects of hyperphysiological amounts, we have tended to believe that any amount of the organic food stuffs, protein, fat, carbohydrate, could do no serious injury to the organism. The warnings of the low-protein school have passed unnoted. Within the last few years, however, the dangers of over-indulgence in carbohydrate in relation to disturbances in sugar metabolism have been realized and our ideas as to the protein element of the diet seem likely to a similar revision. Whether or not nephritis, one of the most common diseases, is caused or influenced by high protein diets is at present a matter of controversy. The experiments of Newburg and others have shown that in animals, kidney damage may result from excessive amounts of protein in the diet and further, that apparently this damage may be ascribed to certain specific components of the protein molecule, certain individual amino acids. These amino acids have been shown by the recent studies of Van Slyke to be the form in which the protein is absorbed and circulates in the blood stream. The emphasis has tended to shift from the idea of protein to the role of individual amino acids. If these studies on animals are significant for human nephritis, the conclusion must be drawn that one factor,

at least, in nephritis is a defect in the intermediary metabolism of amino acids connected possibly with the metabolic function of the liver or kidney, or, more probably, a disturbance of equilibrium in the intermediary metabolism of protein and its decomposition products. In either event, the problem of nephritis becomes one essentially chemical, an aspect of imperfect nutrition.

Brief mention may be made of a few other typical problems whose aspect has been altered by recent discoveries of students of nutrition. Since the days of Garrod, uric acid has been charged with the responsibility for gout. The studies of the blood indicate, however, that high uric acid alone does not occasion gouty symptoms since in nephritis the uric acid of the blood may increase much above normal, and to an amount several times greater than that found in gouty individuals. The recent work of Folin has demolished the whole structure of the theories of uric acid metabolism and has demonstrated that in man, a marked destruction of uric acid may occur. The studies of gout in this work suggested many new aspects of the question. Part of the responsibility for gout may be borne by as simple a chemical abstraction as tautomerism. The more complete knowledge of the chemistry of the intermediary metabolism of carbohydrates has made possible dietetic relief in diabetes and as already pointed out, it is doubtful whether without this knowledge insulin, if discovered fifteen years earlier, could have been advantageously utilized in the treatment of diabetes. Adrenalin has been known for over twenty years, but in the absence of a knowledge of the exact role of the adrenals in metabolism, adrenaline has been of little or no use except as a drug. The more exact knowledge of the chemistry and function of the thyroid gland in metabolism would make possible a more extensive and rational use of thyroxin.

The discovery of the vitamins and their influence on nutrition has also been far reaching in its importance. As a result of the chemical studies of the British group at the Lister Institute, the way was opened for the mitigation of scurvy among the allies, particularly in the Balkan peninsula. Infantile scurvy in its latent or active form is controllable since students of nutrition have shown new and cheap sources of the vitamin C, the antiscorbutic vitamin. The advances along the lines of the cause and prevention of rickets are even more striking. With the discovery that synthetic rations could be prepared which would produce wide rachitic metaphysis in the shaft bones of rats, an experimental method of studying rickets was available. Investigators were not slow to take advantage of this. Cod-liver oil, long used in infant nutrition, was found to be most potent in its antirachitic properties, while many other fats lacked this factor completely. Exposure to sunlight or to ultra-violet light was shown to act also as a preventative on curative agent. Within the past month, it has been announced that irradiation of fats, otherwise inactive in preventing rickets, caused them to become active and that rations which ordinarily produced wide rachitic metaphysis in the shaft bones of rats became antirachitic and promptly effected a rapid and complete healing of the lesion. In another series of experiements, irradiated rats placed in the same cage with non-irradiated rats were able to induce growth in the latter. The problems of rickets and heliotherapy seem likely to take on entirely new aspects as a result of this chemical work from the University of Wisconsin. That chemical changes must be produced in the tissues of rachitic rats as a result of the action of light has been unquestioned, but now that antirachitic properties can be conferred on foods by irradiation, in vitro, the determination of the chemical nature of these changes becomes one of the most important possibilities in the studies of rickets.

One further illustration from a problem in which the speaker is particularly interested may be cited. For years, the cause of cystinuria, an "error of metabolism," has been unknown. Why should certain individuals fail to perform completely the normal combustion of cystine, the main sulfur-containing amins acid in the protein molecule? The cystine, incombustible in part at least in these cystinurics, is treated as waste material and eliminated through the kidneys. In these organs or in the urinary bladder, due to its insolubility, it crystalizes out in many cases and calculi which requires surgical treatment for their removal may result. The newer studies of sulfur metabolism have assigned to cystine (and sulfur) an important role in oxidation and reduction and have shown that the conversion of cystine, the disulfide, to cysteine, the mercaptan, is the first stage in oxidation of the sulphur. Is the cause of cystinuria a congenital inability to perform the first stage of the conversion, the conversion of the difficultly soluble cystine to the unstable readily soluble cysteine? Is it possible to aid in the conversion by chemical means?

The illustrations brought together here today make no claim to originality. They have been cited merely to show some ways in which chemistry has been and can be applied to medicine. My remarks have been directed not to my colleagues, not primarily to the more advanced students, but to those of the first two years who are frequently impatient because

they are seeking for something "practical" in the work of the preclinical years. If these remarks have served to show that chemistry may be practical, they will have served their purpose. The illustrations are all drawn from material discussed and used later in the clinical side of medicine.

I would not plead for more chemistry. In the crowded medical curriculum, that can not reasonably be expected at the present time. I do, however, plead for a more thoughtful chemistry, for a realization by the student in the preclinical years, that chemistry has much of value in medicine and that the contributions of chemistry are increasing yearly. Disease is caused by a changed condition of the cells and these cells must be regarded as masses of colloidal material, the changes in which are in the last analysis to be regarded as occasioned by physical and chemical causes. To prevent these changes and to restore these cells to their normal condition is the problem of medicine, in the solution of which chemistry works hand in hand with the other preclinical sciences.

LEAD POISONING*

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Lead poisoning has been described as the industrial disease par excellence. Without question it is the most prevalent of all industrial poisonings, and this due to carelessness on the part of employer and employe. Furthermore the diagnosis is often missed because the physician does not take a careful occupational history nor examine the patient carefully for signs of lead intoxication.

The following report is based largely on a study of 86 patients admitted to the Receiving Hospital, Detroit, between May 1st, 1921, and April 1st, 1923.

ETIOLOGY

Exposure to lead is a danger in numerous industries. Among our patients there were four general painters, two spray painters (automobile), two brass moulders, and seventy-two automobile body sanders. This latter occupation consists of sandpapering down the preliminary coats of paint which have usually been sprayed or flowed on the body, preparatory to the finishing coats. This process is particularly in use on the cheaper paint jobs. Needless to say it is a highly dangerous occupation because of the enormous amounts of lead dust produced, and in Austria, Germany, Belgium, and Switzerland is forbidden by law. Other very dangerous occupations are the mining of lead, smelting, roasting, the manufacture of white lead, pottery making, glass blowing, printing, and the manufacture of electric storage batteries.

That dry sandpapering of paint ranks as one of the most dangerous of occupations involving the handling of lead is shown by the fact that of seventy-two sanders symptoms occurred in one month or less of work in twenty-six cases, and of these seven were afflicted in less than two weeks. One man showed symptoms after three days of exposure and this man already had a lead line on the gums.

Our patients ranged in age from 15 to 65, the majority being in the third and fourth decade of life. No especial susceptibility was noted among the younger patients. Only two women were cared for, both enamel sprayers, a highly dangerous occupation, and one which should be forbidden to women because of their increased susceptibility and the danger of selective action on the generative system.

In discussing the symptoms of plumbism we must differentiate between the acute and the chronic types. In the former large doses of lead are absorbed in a short period. Nearly all our patients fell in this group.

SYMPTOMS

Of the gastro-intestinal disorders, pain is the most common, being present in all but three of our cases. It is usually cramplike. though often taking the form of a dull and heavy ache. The patient usually describes it as being all over the abdomen or localized about the umbilicus. Associated with the pain there was frequently a slight generalized abdominal tenderness. Occasionally the pain and tenderness are confusing as is shown by the fact that five cases were referred to the hospital with the diagnosis of acute appendicitis, and two were labeled acute cholecystitis.

Constipation was the symptom next in frequency, occurring in 73 per cent of the series. As a rule it is severe, five or six days elapsing without a movement in spite of a liberal use of cathartics. Anorexia, nausea and vomiting and a sweetish metallic taste in the mouth frequently occur, and are associated with pallor, general weakness and a constant sense of fatigue.

The neurological symptoms were relatively infrequent in this series, actual wrist drop occurring in only five cases, while a weakness of the forearm (one or both) was noted in nine cases. No other involvement of the peripheral nervous system was noted. Apparently in most of our cases, the amount

*Read before Section on General Medicine, M. S. M. S., Mt. Clemens, September, 1924.

of lead absorbed was so overwhelming that severe gastro-intestinal symptoms occurred before there was evidence of involvement of the peripheral nervous system.

When the ingestion of lead is more slow and long continued, wrist drop, or other palsies, muscular weakness, and tremors usually occur, associated with anemia, hypertension, sclerotic vascular changes and cardio-renal disturbances.

Involvement of the central nervous system,—lead encephalopathy,—fortunately a rather rare condition, was seen in four cases. Each of these was an automobile body sander. In two cases the history was unobtainable as to exposure,—one case had worked for two and one-half years, and another for only three weeks. The diagnosis in all cases was made by the occupational history, lead line on the gums, wrist drop, blood picture, and absence of laboratory evidence of syphilis, meningitis or renal disturbances.

The following case is typical:

Case No. 16692, Negro, Age 40 years, Auto body sander three months.

Admitted to hospital October 13th, 1922. Symptoms began the night before entrance with headache, dizziness, and blindness. The day of entrance had several generalized convulsions lasting fifteen minutes, at intervals of about four hours. He was brought to the hospital in the evening in a stuporous condition. Previous to his attack he had vague gastric distress at times and for one week had constant nausea and vomiting.

On examination the patient was stuporous. There was a well defined lead line, and blood pressure of 175 systolic, 125 diastolic. Marked weakness of extensor muscles of wrist was present. Blood examination revealed Bb. 62 per cent, R. B. C. 3,650,000, and the smear showed large numbers of red cells with basophilic stippling. Blood Wassermann and blood chemistry were negative, as were the spinal fluid findings.

Of the physical signs elicited in plumbism the most common is the lead line on the gums. It appears early and occurred in 85 per cent of the cases. It is found most regularly on the anterior gum margins, at the bases of the central incisors, both upper and lower, but is occasionally found posterior to the incisors and sometimes on the buccal mucous membrane. It is most marked in cases with bad teeth or gingivitis but also is present in perfectly healthy mouths.

Hypertension is frequent in acute cases, but as a rule disappears after the acute symptoms have subsided. Other cardio-vascular changes are notable by their absence. On the chronic type the blood pressure is often permanently elevated, and is associated with arterio sclerosis, hypertrophy of the heart and renal changes.

BLOOD PICTURE

The characteristic blood picture is that of a secondary anemia of moderate severity with an associated basophilic stippling of the red cells. This occurs even in early cases, appearing in one patient after only a week of exposure in the sanding room, and is present in practically all the cases of chronic poisoning. The anemia may at times become severe. We have observed patients with a hemoglobin as low as 45 per cent.

TEMPERATURE AND PULSE

It is an interesting fact that in eighty-two per cent of our cases a slight rise of temperature to ninety-nine degrees or above was noted. A few cases were admitted with temperature and with symptoms of upper respiratory infection, which had started simultaneously with the onset of plumbism. Apparently in those cases the infection was the immediate cause of bringing out the symptoms of lead poisoning which had been hitherto latent. This occurrence has frequently been noted by British industrial physicians.

DISCUSSION

"All lead poisoning arises from the inhalation of dust and fume." This statement by Legge should of course, be limited to industrial plumbism, but is well borne out by the statistics presented in this series. Eighty-eight per cent of our cases were sanders working in an atmosphere laden with lead dust, and the remaining patients all worked at trades in which the absorption of lead by inhalation of dust or fume is an ever present hazard. Painting, especially spray painting, as used in the automobile industry is a notoriously dangerous occupation, and enamel, as used on sanitary ware may contain from 1 to 20 per cent of lead; also the process of application produces great clouds of lead dust and fume. Both of our patients who had worked as enamel-sprayers were young girls. In England they are prevented by law from working at such trades, as women, and especially young girls, are known to be especially susceptible to lead. It is interesting to note at this point that the two brass moulders showed no symptoms of "brass founders ague," but gave a definite history of lead symptoms with the physical signs of plumbism. The better grades of brass may contain no lead, but the cheaper varieties may contain about ten per cent.

With Doctors F. M. Meader and A. S. Dean of the Detroit Department of Health the author visited the sanding department of one of the large automobile body factor-

ies. The air was filled with dust. Bodies with the prime coats of paint were automatically conveyed through the room while the "Sanders" rubbed them down with sand paper. Many of the employes wore masks of several thicknesses of cheese cloth, though this was not insisted upon, nor were these masks changed every day, in all cases. The dust was removed from the air by an overhead ventilating system, being sucked directly upward past the workers mouths and noses. One of the masks worn for one day was procured and was found to contain eighty-one milligrams of the element lead. Goadby states that the absorption of two milligrams of lead a day is an unsafe dose. Thus the possibility of the ingestion of tremendous amount of lead daily explains the early appearance of symptoms in sanders. One of our patients came to the hospital after only three days of work, and many of our patients stated that a large number of laborers quit after two or three days of work complaining of colic. As a rule symptoms occurred in the other trades represented, only after months of exposure and did not seem to be as severe. Legge believes that some individuals can build up an immunity to lead after an early mild intoxication, and then hold their intake and excretion in balance for a long period of time. This is apparently possible in the less dangerous trades, but in the sanding room the dose is too overwhelming, and acute symptoms appear early.

A blue line on the gum margins, abdominal pain, and constipation form a triad of symptoms diagnostic of acute plumbism. They occurred in nearly every case in this series, and were closely followed in frequency by other abdominal symptoms, nausea, vomiting and loss of appetite. It is particularly to be noted that the lead line may appear after only a few days of exposure. It persists long after the other signs of poisoning have disappeared, and by itself cannot be considered diagnostic of lead intoxication. On the other hand it should be considered an evidence of exposure to lead, and a warning against further exposure. Furthermore its appearance in one worker indicates a dangerous hygienic condition for all individuals at the same work. Neurological symptoms may be absent in the acute cases, but are nearly always present in the chronic type and are associated with pallor, loss of sight, asthenia, gastro-intestinal and cardio vascular symptoms. In doubtful cases the presence of basophilic stippling in the stained smear will clinch the diagnosis.

RESULTS AND TREATMENT

In this series of eighty-six cases there were three deaths, two due to lead encephalopathy, and the third to dementia paralytica. All other cases were discharged improved or well. The routine treatment instituted in all cases was the administration of potassium iodide and liberal catharsis with Magnesium sulphate. In some acute cases morphine was necessary to control the colic. Benzyl benzoate was given a trial in several cases without effect on the gastro-intestinal pain as far as we could see. In a few cases atropin gave good results in the control of colic. All cases were instructed to seek other employment, and were warned of the danger of handling lead. Recent investigations of Aub and his associates indicate that lead, after ingestion, is carried in the blood stream as a phosphate and is stored in the calcareous portion of the bones. While stored there no symptoms of intoxication occur, but poisoning occurs when the lead is being transported after absorption or following release from the bones. They found that elimination of lead is increased by a low calcium diet and acid medication. They recommend Ammonium Chloride in doses of 8 to 12 grams, daily, this drug changing to urea and liberating acid within the body. Alkali therapy will also hasten the elimination of lead, though to a lesser extent than treatment with acid.

It is interesting to note that since April 1, 1923, only twelve cases of plumbism have been admitted to the hospital. On investigation we found that the factory from which our patients had come had eliminated the dry sandpapering process entirely, and instituted "wet sanding" in its place. With this method the painted body is kept constantly moist with water while the sanding is going on. As a result the air is entirely free from the dust with a resulting large reduction in plumbism. Because of the marked danger in the "dry sanding" process we feel that it should be prohibited by law. Furthermore, it would seem advisable to make plumbism and industrial diseases in general reportable, and to institute state or federal control of factories as has been done in England, where, by careful control and frequent examinations, lead poisoning and other industrial diseases have been reduced tremendously.

SUMMARY

1. Eighty six cases of lead poisoning were cared for in the Detroit Receiving Hospital in two years.

2. Of these, seventy-two were automobile body sanders.

3. This occupation is, at best, exceedingly dangerous, and the lack of precaution observed, made it a positive menace to the health of those exposed.

4. Due to the exposure to enormous quantities of lead dust sanders may develop symptoms after only a few days work, and encephalitis may develop after a relatively short exposure.

5. A lead line on the gums, abdominal pain, and constipation from a triad of symptoms diagnostic of acute lead poisoning. Basophilic stippling of the red blood cells is confirmatory of the clinical findings.

6. It is recommended that the method of "dry sanding" of painted surfaces be prohibited by law.

7. Lead poisoning and industrial diseases in general should be reportable, and under the control of state or federal authorities.

(From Medical Clinic, Detroit Receiving Hospital.)

DIABETES AND ITS MODERN TREATMENT*

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Diabetes is an old, old disease. The word comes from a Greek root meaning a flowing or a fountain, and I think the terminology particularly apt, when one considers the outstanding symptoms of this disease,—excessive urination incited by sugar, which comes from the starch and the actual sugars of foods, from fats, meats, and to a limited extent, from wasting body tissue.

In 1880, the death rate from diabetes in this country was 2.8 per 100,000, and by 1910 it had risen to 14.9 per 100,000. It reached the high water mark of 17.5 in 1915, fell again until 1919, since when it has gradually been on the ascent. Conservative estimates place the number of diabetics in the United States at nearly two millions!

Sugar is a necessity to the body, and the process by which foodstuffs is turned into sugar is a normal one; there is always sugar in the blood, about 1 part in 1000, to which normal kidneys are impermeable. It is as sugar that a large portion of the food, in fact, all of the carbohydrate, more than half of the protein, and about one-tenth of the fat, enters the tissue cells for consumption, and this is disposed of by storing and burning. It is burned so as to provide energy and heat, and stored in the form of glycogen and fat in liver and muscle.

This process requires the help of a ferment, and it is in a fermenting capacity that the pancreas or abdominal sweetbread functions. One part of the pancreas assists digestion and the other part prepares an internal secretion for delivery into the blood. Embedded in the pancreas are groups of cells which are responsible for this sugar ferment, and these cells are no other than the famed islands of Langerhans, so named from the German pathologist, Robert Langerhans, who discovered them in 1869. When they are injured sufficiently so as to impair their normal functioning, you have in fact diabetes.

A condition arises wherein the burning and storing process is disturbed, the body cannot utilize the sugar which it has made, and the surplus accumulates in the blood in excessive amounts, part of which spills over into the urine through the kidneys. This failure to burn sugar is co-incident with partial failure to burn fat, and the incomplete combustion of fat produces acetone bodies in the blood stream, which may cause acidosis and eventually coma.

Injury can be caused by inflammation due to infection, by scarlet fever, arteriosclerosis, by stones in the pancreatic duct, by heredity, for diabetes often runs in families, and even by over-eating. When the output of sugar ferment is reduced to the point when it is below the amount required to take care of the food sugar, the extra unused sugar passes with the blood through an over-worked pancreas. Any organ pushed to over-exertion becomes exhausted; so is it with the pancreas, the beta cells of the islands becoming atrophied.

The outstanding symptoms are excessive urination, acute hunger and thirst, inanition, and the presence of glycosuria. The purpose in treatment is therefore to provide the diseased or injured islands opportunity for rest; hence the necessity for restricting diet in diabetes, the evading of injudicious eating, and the curtailment of high sugar-producing foodstuffs.

Carbohydrate, although it forms more than 70 per cent of the ordinary diet, yet constitutes but about 1 per rent of body weight, denoting that it is the most easily metabolized of foodstuffs. There is a limit, of course, to the amount of sugar one can assimilate, the normal person being able to take ¼ per cent of his body weight—150 to 200 grams, (5 to 7 oz.), at one time without evidencing glycosuria. The body can store an excess of sugar without glycosurial effects, and it often does this in the stable form of fat, but this is merely a pathological substitute for a physiological method, and besides adding unnecessary weight to the body, has a tendency to reduce activity and overtax energy. Von Noorden classes certain cases of obesity as merely latent glycosuria.

*Read before the Wayne County Medical Society.

It is only reasonable, however, that there must be a limit to this fat depositing process, and when this limit is reached, the surplus sugar must pass into the urine. Naunyn has declared that anyone passing sugar even after a free ingestion of starch is a potential diabetic. Thus the inference can properly be drawn that the line of demarkation between obesity and diabetes is a particularly thin one and not subject to much elasticity.

After a meal containing sugar the blood sugar of a normal person rises, and may reach as high as 0.15 or 0.17 per cent, falling again after an hour or more. This is what is known as the glucose threshold. If this percentage is exceeded some sugar will appear in the urine, but when sugar metabolism has been impaired for a long period, the blood sugar may rise without evidence of sugar in the urine. Some diabetics have failed to show glycosuria with blood sugar even as high as 0.25 per cent, at which figure the normal person would of a surety excrete sugar.

We are here confronted with a true case of hyper-glycemia, non-pancreatic in origin, but which, if continued, will ultimately affect the structure of the pancreas, causing vacuolation and exhaustion of the cell islets in their attempts to deal with the excess sugar in the blood.

Since the sugar in the blood rises after a meal, some attempts must therefore be made in the treatment of diabetes to fix the range of sugar between arbitrary limits. The lower limit is easily defined as that which does not cause symptoms of hypoglycemia, i. e. deficiency of sugar in the blood. The symptoms of this condition are, a vague fear of something unknown, tremulousness and shakiness, profuse sweating, muscular weakness combined with palpitation of the heart. The ultimate symptoms are, dizziness, incoherent speech, convulsions, and finally coma. The administration of any carbohydrate out of which glucose can easily and quickly be formed, is the antidote, and in severe reactions epinephrin may be given, followed by sugar. Diabetic treatment should therefore be such that will prevent the blood sugar falling sufficiently to lead to symptoms.

The upper limit is commonly fixed at 0.15 per cent, and this has been found suitable for all purposes in the course of average treatment. The ideal method of course, would be to take blood samples at various times of the day over a period of two or three weeks, but in the majority of cases this is not practicable. I find that the 0.15 per cent limit meets requirements, unless during the course of treatment of a peculiar case, events decide otherwise.

Examination of the urine does not offer a satisfactory basis for the estimation of sugar in the blood, for the sugar excreting ability of the kidneys must be considered; glycosuria may occur without hyperglycemia, and hyperglycemia is not necessarily followed by glycosuria. Hyperglycemia of whatever degree is potential diabetes.

Before proceeding further, it is desirable to consider some forms of glycosuria which appear to be dependent upon defects other than in the pancreas. They may be interpreted in various ways, as of renal, neurogenic, alimentary or hepatic origin.

Renal glycosuria, which is not dependent on a disturbance of metabolism, has a similarity to the effects of phloridzin poisoning, in that sugar is excreted regularly or intermittently, abnormally, even when the blood sugar is normal, nor is this sugar secretion changed by dieting. Furthermore, untoward effects are possible if attempts be made to render the urine sugar free. It can even be accounted for by congenital increased permeability of the kidneys for sugar. No complications of renal disease are commonly found with it; it is probably a benign disease, and calls for no treatment at all. Prognosis as to longevity is very favorable, though watch must be kept because of the possibility of the change of a supposed renal glycosuria into true diabetes.

Glycosuria can also depend on disturbances of endocrine glands, and the advances made in our knowledge of internal secretions tell us that certain inter-relations have to be considered. Excitable, nervous people often exhibit glycosuria after mental or physical strain, and in true diabetes the intensity of the glycosuria is very dependant on the condition of the entire nervous system.

The vegetative nervous system consists of two parts which are naturally antagonistic to each other—the sympathetic which converts energy into motion and the parasympathetic or extended vagus, which stores up the energy, especially the energy derived from the assimilation of food. These co-operate with the endocrine glands, the sympathetic with the adrenals, thyroid and pituitary; the other with the pancreas and possibly the parathyroids. The first group mobilizes sugar into the blood-stream where it is normally utilized for muscular energy and sometimes the production of fever. If carbohydrate metabolism is functioning properly the sugar is utilized at once, but if not, hyperglycemia though not necessarily glycosuria results.

Witness the occurrence of hyperglycemia in pneumonia and rheumatic fever, and I think you will find the explanation of focal sepsis in

aggravating diabetes. Sepsis need not necessarily cause hyperglycemia, but the occurrence of hyperglycemia in sepsis, indicates an imperfection in the sugar storing mechanism, and if this impression is already present, sepsis will aggravate it.

Hyperthyroidism with hyperglycemia will develop into true diabetes if the hyperglycemia is prolonged enough to damage the cell islets, but in such cases it is probably the thyroid rather than the glycosuria which calls for treatment, the essentials of which are rest, physical and emotional, removal of septic foci, nor does the dieting restrictions need to be very drastic.

On the other hand, in atrophy or defective formation of the thyroid gland, the pancreatic powers are increased, and patients suffering from this disease—for instance myxedema,—can take large quantities of glucose without evidencing glycosuria.

Disturbances in functions of the ductless glands and particularly of the thyroid, leading to glycosuria, are particularly common in individuals suffering from catarrh of the upper intestine with evidences of toxemia. In the earlier stages the glandular trouble appears to predominate, but as this conditions progresses an alimentary (hepatic) glycosuria is apt to develop, the pancreas becomes affected, and ultimately true diabetes results. Here again the primary source of trouble, the intestinal catarrh, needs to be attended to first.

The antagonism between the pancreas and the adrenal medulla is well known, and the injection of adrenalin to check secretion following removal of adrenals can cause glycosuria, large doses having a tendency to turn the glycogen of the liver into sugar and thus interfere with the pancreatic storage mechanism. This is more pronounced in the case of those with a highly strung sympathetic system, whereas those with a highly strung vagus system are more impervious to adrenalin. Generally speaking the vagus system predominates in hysterical people, and the sympathetic in neurastheniacs. The quick antidote is to deprive the patient of sugar, so that the mechanism for storage of sugar as glycogen is not suddenly overtaxed immediately after food.

Pituitary glycosuria is caused by the hyperfunction of the pars intermedia of the pituitary forming an internal secretion which depresses the utilization of sugar by the organism. The glycosuria may be intermittent seeing that the pituitary is rythmic in its functions, and in this connection it may be noted that the glycosuria of pregnancy, which is due to its stimulating effect on the pituitary, will directly affect the internal secretion of the pancreas, diverting the sugar from storage in the material tissues to the use of the foetus.

There is to be found a peculiar facial appearance in the majority of adults suffering from pituitary glycosuria, somewhat resembling acromegaly, though the typical bony changes to be met with in that disease are not present. Others exhibit signs of diminished sexual development, depending on whether the anterior lobe of the pituitary is overacting or underactive. All this prompts the suggestion that in some cases at least, it is a congenital condition.

Glycosuria associated with pancreatic disease is easily recognizable; there is fatty diarrhoea, sometimes creatorrhoea, and the output of urinary diastase is increased. This may be present in the early stages, or even before glycosuria occurs, subsequently subsiding.

We have now to consider the final stages, where through a combination of defects the utilization of carbohydrates entirely or almost fails, and the metabolism of fat and protein is consequently more or less imperfect. Such a condition may develop slowly or rapidly, but once fully established, the clinical symptoms are always much about the same, and the blood changes of a similar type. The dominating feature of this is defficiency of the internal secretion of the pancreas,—the so-called true diabetes, absolute pancreatic diabetes if you care for a newer definition, but most commonly known as diabetes mellitus.

To date it cannot be said that a cure for diabetes has been found, and this notwithstanding the epochal discovery of yesterday. Certain palliatives and dietetic treatments have been devised and more or less perfected and clinicians, chemists, physiologists, and metabolists have labored to arrest or at least ameliorate diabetic conditions. Up to the end of 1920 a wonderful compendium of knowledge had been gathered, a sure foundation laid, a stage in fact set, for the supreme effect and discovery in the field of diabetic research.

I vision the old giants in the work, and our men of contemporary days, and I think of them as men matured, and mellowed with the graying thatch of hard-worked-for knowledge and time-bought experience. Brunner, Claude, Bernard, Langerhans, von Mehring, and Allen, Joslin, Marsh, Newburgh, hardy pioneers were they in an almost widerness, harbingers if you will, of greater things to come.

We are oft reminded these days that we are in an age when youth must be served, glorious, imaginative youth, and I am one who does not care to dispute the assertion. Has not youth given us this supreme discovery?

Simpson, Jenner, Koch, Pasteur, mighty

names all, made their discoveries in the accepted fashion, and all had a solid background of seasoned experience, and only their niche in in fame after prolonged and exacting labors. Banting, the young Canadian surgeon, had an idea, and Best, the second year medical student possessed some knowledge in physical research. Thus equipped, and who will say they were adequately so, they collaborated, and after short lived, but hectic and strenuous days, and nights too, in plain every day language, they "put the idea over." They gave us Insulin, to quote Allen, "the first replacement of negative by positive therapy in diabetes," and probably the most important therapeutic discovery of a century.

Insulin is the hormone of the pancreas which regulates carbohydrate metabolism, and although it does not cure diabetes, does provide an artificial administration of the internal secretion of the pancreas in sufficient amounts to compensate for the deficiency in production of a patient's own pancreas, thus promoting the utilization of a definite amount of sugar. Administration is by subcutaneous and occasionally by intravenous injection, while it is not effective when given orally or by rectum.

The drug has attracted widespread publicity in both the lay and medical press, and rightly so, but with this result, that diabetics of all sorts and in all conditions have eagerly seized on it as a panacea for their ailments, and in increasing numbers are clamoring to be shown what it can do for them. They must be told that Insulin treatment is conditional, that there are 'ifs' and 'buts' about it, and that many factors have to be considered before its aid can be advocated in particular cases.

It certainly cannot be said that every diabetic patient requires it; expense is a deterrent in many cases, while in others, chiefly of a mild nature, reasonably restricted diets produce the desired results alone. There has crept into diabetic literature a phase or circumstance which can properly be described under the nomenclature of "Investing in Insulin," and investing in Insulin requires cogitating and weighing in the balance just as much as does investing in stocks or bonds. It's returns that count.

The average diabetic patient must consider whether he will gain sufficiently in strength and efficiency to compensate for the expense entailed in buying the drug for an indefinite period, for the time spent in learning how to use it, and for all the annoyances and restrictions that its use involves. To the physician no less than to the patient, are these questions important. To some patients Insulin is a necessity, while to others it is a luxury and a needless expense. It is a luxury to most patients with diabetes in a mild form, while as a general rule it should be given unhesitatingly to diabetic children, in all cases of coma or severe acidosis, in cases where dieting fails to relieve, and where severity necessitates surgical operation. It is also more necessary to patients under 40 than to those above that age. Happy is the physician who has the knowledge and intuition to help his patients solve the eternal "to use or not to use" question satisfactorily.

TREATMENT

A most important phase of Insulin treatment is the accompanying dieting restrictions, for restrictions there must be if this pancreatic extract is to be used wisely and successfully. In fact, nothing is to be gained by its use in diabetes, unless the patient's diet is scientifically adjusted and the proper amount of food, both carbohydrate and other materials given in conjunction with it, its chief purpose being to enable the patient to utilize a greater amount of carbohydrate and gain in strength.

Insulin, instead of simplifying diabetic dieting, has made it more complex, and the physician must be more eager than ever to familiarize himself with the best types of diabetic procedure which are at his disposal. The advent of Insulin has uncovered more diabetics than the profession had cognizance of, which naturally has thrown upon hospitals and general practitioners the burden of treating many more cases than formerly.

There are three distinct systems or methods of diabetic dieting in use in the best informed medical circles today,—the "Allen" method or a modification of it, the "Joslin" method, and the "high fat" method. Each has its ardent admirers and exponents, and no one can truthfully say which will prove superior in the end. All three have invariably produced beneficial results.

The "Allen" and "Joslin" methods are similar, in that both are undernutritional; Joslin avoids fasting as much as possible, while Allen stringently demands a constantly normal blood sugar and low weight and strength, believing that the diabetic patient is better off when his weakened functions are spared as much as possible. Both allow only a minimum of fat because of its association with the liberation of acid bodies.

The "high fat" method, originating with Newburgh and Marsh of Ann Arbor, was carried out to its furthest point by Woodyatt. It allows a high proportion of fat and a low proportion of carbohydrate and protein. They insist that patients who are undernourished, will metabolize their own body tissues, and

that from a purely metabolic standpoint little or no difference is encountered between body and food fat.

Wilder has also introduced a very acceptable method, in its essence a compromise between the "Allen" rigid diet and the "high fat" method.

No one who needs insulin and uses it, can thereupon start out to eat what he desires. Larger diets can be given with Insulin, i. e. regulated diets, but there must be a very careful balancing of the Insulin dosage and the proper food values. So as to avoid on the one hand an excess of sugar in the blood, and on the other hand, complications and reactions which would result from an overdose of Insulin, or from its use with insufficient food. In addition, the patient must be trained to understand the fundamentals of dietetics, to follow the prescribed diets at home with food scales and tables of food values, to test his urine daily, and also learn to administer the drug himself and recognize and be able to handle emergencies when they arise. Acidosis must be especially guarded against, for if allowed to continue interruptedly diabetic coma may result. All this means systematic study and takes time and great patience, but the surprisingly good results will assuredly make up for any possible annoyance or inconvenience.

Treatment must be strictly individualized, that is to say, the daily dose of Insulin and the amount of food for which this dose will provide adequate ferment must be determined separately for each patient. This entails careful planning by the physician and intelligent co-operation and strict adherence to instructions on the part of the patient, so that the whole aim and object of successful Insulin treatment may be attained—to render the urine sugar free, to maintain the amount of sugar in the blood within normal limits, to improve nutrition and to prevent backward progress.

Before starting treatment it is important to discover and treat any other sources of infection, such as boils, pyorrhoea, etc., if such exist. Tuberculosis of the lungs should also be sought for, as this is a common complication, especially in diabetes, which has been long standing. Infection of whatever kind adds greatly to the difficulty of management, and obscures a patient's tolerance to the drug.

Most diabetics can be satisfactorily managed in the home, and only very severe cases and cases with complications and in coma need hospitalization, emergency cases as it were. The great majority of diabetics are of moderate means and cannot afford extended hospital treatment or even nursing service, so that Insulin treatment must be so simplified that its technique can be made applicable to the facilities afforded by the average home or ambulatory clinic. On the general practitioner devolves the onerous duty of meeting these conditions.

Assuming that there are no complications we may now proceed to outline the course of modern treatment in diabetes, reinforced by the drug Insulin.

A classification of cases based upon the assimilation of carbohydrate is permissible and will be found helpful in treatment, but such classification must never be arbitrary, for cases have been known to graduate from one class into another and vice versa. It is customary to divide diabetics intot three types,—mild, moderately severe, and severe. Joslin considers that severe cases have a tolerance of up to 10 grams of carbohydrate, moderately severe from 10 to 50 grams, and classifies the remaining cases as mild. He refuses to determine severity in terms of glucose tolerance. If no insulin is needed, the case may be regarded as mild, case requirements under 30 units moderate, and when 30 units or over are required to prevent glycosuria, the case may be definitely declared severe.

Formerly it was considered necessary to make many observations of the blood sugar, but now the urinary sugar alone is watched, along with the systematic effects of the drug.

It is a good plan to first endeavor to render the urine sugar free by dietetic measures alone. Rest in bed is the first requisite, with a one or two days fast, followed by a gradual increase in the 24 hour diet to something like the following characteristic Graham diet:

3 eggs.	1½	oz. butter.
2 oz. meat.	1	oz. cream.
2 oz. bacon.	12	oz. cooked green vegetables.
2 oz. ham.	4	oz. uncooked vegetables.

This has a total of 58 g. protein, 118 g. fat, 17 g. carbohydrate in the form of vegetables, all with a caloric value of 1358, and this amount of food is sufficient for an adult weighing 150 pounds, and represents about ½ g. of protein per pound and 21 calories per kilo. For a patient weighing more or less, the diet would have to be increased or decreased and the calories per pound kept about the same.

The caloric needs of the body vary greatly, for there are so many angles to consider, and no two authorities seem to agree on a definite standardization. The facts of age, sex, weight, nature of occupation, etc., all enter into the reckoning and help to retard what would make a very desirable agreement.

It is very necessary to have a standard diet, such as the ladder diet; it is simple and easy

for the patient to understand and carry out, and the necessary deductions or additions can be made with facility. In the case of children, adjustment is rather more difficult, a slightly larger proportion of protein is required, and the fact that growth and natural increase in weight are ever present, must not be lost sight of.

The Graham Test Diet (Fig. 1) is of the ladder variety, the computation of the quantity of carbohydrate, protein, fat, and caloric values in the different kinds of food, being taken from a standard table of food values. These values are known, or ought to be known, by heart, by every physician handling diabetic cases; at least he should have such a table handy for immediate reference.

TEST DIET—Fig. 1.

	Breakfast	Dinner	Supper	Daily total Oz.	Daily total Grams	Carbohydrate Grams.	Protein Grams.	Fat Grams.	Calories
Eggs	2		1	3	90	0	18	18	234
Meat	2 oz	2 oz		2	60	0	16	10	154
Bacon				2	60	0	5	30	310
Ham			2 oz	2	60	0	10	17	165
Butter	1/2 oz	1/2 oz	1/2 oz	1.5	45	0	0	37	337
Cooked Veg.	4 oz	4 oz	4 oz	12	360	12	6	0	72
Uncooked Veg	1 1/3 oz	1 1/3 oz	1 1/3 oz	4	120	4	2	0	24
Cream	1/3 oz	1/3 oz	1/3 oz	1	30	1	1	6	62
			Totals	27.5	825	17	58	118	1358

Should this diet be sufficient to render the urine sugar free, tolerance can now be determined. By increasing the diet a little at a time, raising the intake of carbohydrate, until a limit is reached beyond which an excretion of sugar will result, that limit will be the point of tolerance. When this is known a scheme of dieting can easily be planned and food mixtures prescribed which will provide enough protein for tissue building, enough calories from fat and carbohydrate to provide energy, and as little carbohydrate as is consistent with a properly balanced diet, not to cause acidosis

The absence of glycosuria gives evidence that all the carbohydrate is being utilized, and this being so, it may be altogether possible to treat the patient by diet alone, but it would be unwise to assume this in every case.

On the occurrence of sickness from sore throat, fever, or other complications, this diet would have to be amended, for under the new circumstances sugar tolerance may be temporarily lowered, some of the sugar in the diet will remain unburned, the fat ration will be poorly utilized, acidosis will develop, and Insulin will have to be resorted to.

If, however, the patient continues to pass sugar on this diet, 10 units of Insulin should be injected daily before breakfast, and the urine collected every three hours and tested. If after three days on this treatment, sugar continues to be passed, the dose of Insulin must be increased to 15 units daily, and if at the end of another period of three days, urinary sugar still continues, 20 units must be given, and this process repeated until the urine is sugar free throughout the 24 hours. At this juncture it may be noted that the action of Insulin is transitory, and the effect of the morning injection is usually spent up supper time, and the sugar from this meal may cause the blood sugar level to overreach the threshold, but the following night fast will be sufficient to again clear the urine.

It would be advantageous to know exactly how high the blood sugar is before Insulin is given, but if this is not possible it can practically be estimated by watching the effect of the Insulin. An adult who has only a normal blood sugar cannot take more than 10 to 12 units of Insulin on this diet without showing mild symptoms of over-dosage. If no symptoms of over-dosage appear after 20 units, it is altogether probable that the blood sugar is above 0.15 per cent, and the Insulin should be kept steady at 20 units until symptoms are produced and should then be decreased by 2 units at a time.

When the blood sugar is normal and only 10 or 15 units are required, the diet can be gradually increased, adding to the protein and fat ration in preference to the carbo-hydrate, so as to rest the Beta cells of the islands of Langerhans as much as possible. The caloric value may also be raised to 1800 or 2000 and the protein ration to .75 g. per pound body weight.

The above procedure is necessary for the patient who continues to pass sugar after severe dietetic restrictions. Most patients, it may be noted, cease to pass sugar on the suggested diet. When a patient continues to pass sugar after 20 units of insulin injected in the morning, it naturally follows that he needs more Insulin, but such a patient would be better treated in a hospital, in order to have the necessary

continuous nursing service, as the danger of over-dosage would be exaggerated, since the dose may have to be increased to as much as 25 units in the morning and 20 units at night.

Glycosuria and acidosis may be controlled in a few days, and an estimate of the patient's tolerance, his Insulin dosage and food requirement can usually be determined within 10 days or two weeks. All this having been done, the next step is to plan on a maintenance diet, a food mixture of from 2000 to 3000 calories, which with the help of Insulin will enable the patient to be up and about, to gain in strength and body weight, so that he can resume occupational duties with some degree of efficiency.

30 to 40 or even more units may be required daily, and in this connection it is well to know that I unit of Insulin will balance or 'work' practically 2 grams of sugar. In actual practice it will be found that 20 to 30 units are usually sufficient to permit the assimilation of a properly balanced food allowance of 2500 to 3000 calories.

Conditions may arise that necessitate the discontinuance of insulin for a time, and in this event the high caloric diet must be abandoned and a retreat made to the low caloric or original test diet, with rest in bed, until such time as the use of insulin can be resumed.

It is considered unwise to allow naturally stout patients to put on weight, or to permit too marked an increase in the emanciated; for the former a diet containing less fat is advised, but for the latter a diet sufficient to bring about some increase in weight is recommended, even though more insulin may be required to 'work' it, so that the general condition of the patient is improved along with his resistance to infection.

Single injection is to be preferred, but it has been found difficult for a patient to tolerate more than 30 units at a time and derive the maximum benefit from such a dose. Accordingly 25 units are best given before breakfast and the balance at mid-afternoon.

Before proceeding further I would like to mention that hypoglycemia is very liable to develop at some stage of the treatment, but that it is harmless if recognized early. Sugar by mouth, intravenously, or by rectum if the patient is unconscious, makes a very quick antidote.

An overdose of insulin will produce hypoglycemic reaction; "Insulin shock," as it may be called. Any dose of insulin, insufficiently buffered by sugar in the food, is an overdose, and if it be large, and nothing done to control the reaction, unconsciousness and possibly death may result.

Diabetic coma needless!! No less an authority than Dr. Elliott P. Joslin is responsible for this statement, and I will not question his surprise that such a condition should be allowed to develop. However, conditions must be treated when they exist, and it is a patent fact that diabetic coma is still with us, and it requires treatment,—yes, prompt and skillful treatment.

During processes of acute fevers or infections of whatever kind, a patient's tolerance may be lowered, fat combustion interfered with, whereupon acidosis will develop with ensuing coma. Sugar in the urine may exist even though the patient eats but little, and acidosis become severe. In some emergencies dieting must be restricted and should consist principally of liquids, while the amount of Insulin invariably requires to be increased, and should be given in multiple doses.

Although acidosis is more probable during fevers and in processes of complicating diseases, it can also be caused by indiscriminate eating, and by failure to carry out dieting restrictions, through extreme physical exertion, or by continuation of a high diet without the necessary insulin balance. Uncontrolled acidosis will result in coma, the onsettting symptoms of which are usually drowsiness, nausea, pain in the stomach, roaring ears, and the breath smelling strongly of the fruity, sweet odor of acetone, accompanied with labored breathing.

Granted that a case of diabetes is under strict care, the onset of coma may possibly be due to negligence, but my experience has been that the condition invariably develops and attains great headway before the physician is called in at all. His not then to reason why, but to exercise all the skill and knowledge he possesses to get it under control.

With an adequate knowledge of dietary management, and the proper conception of Insulin and its administration, the physician can save most cases of diabetic coma. Having so potent a means of controlling the primary acidosis factor, he can now devote more time to studying and combatting secondary contributing factors. The essence of treatment is not necessarily to desugarize, but to aid the patient to burn more sugar so that fat may be utilized and the acidosis relieved.

A dose of 30 units of insulin is given at once, along with 150 gm. of orange juice by mouth, and another 20 units with orange juice, if the patient shows no sign of returning consciousness in three hours. The urine should be tested every three hours, and if sugar is still present from three to six hours after the injection, another 20 units should be given. If no sugar appears in this specimen, insulin

should be withheld until it does appear, when only 10 units should be given. Water, coffee, bouillon, only can be given for the first two days, when a start on the gradual ascent of the ladder diet may be made. Should there be no sign of any other infection, and it is most important to know this, the caloric values can be rapidly increased and the insulin dosage regulated accordingly.

Diabetes mellitus has largely lost its aspect of hopelessness and formidability. The weak, complaining, melancholic, tearful patient, is departing from the scene, and in his place is appearing a new being, stronger, more energetic, and with something of efficiency about him, and with the light of hope and new ambition in his eyes. He has a new lease on life, which, however, requires certain very important clauses to be strictly observed in order to ensure its retention. Insulin is not a cure for the disease, it may be again emphasized, but if given wisely and in knowledge, and accompanied with a scientifically adjusted diet, it gives every promise of removing most, if not all, of the terrors, doubts and misgivings, that have previously been associated with this disease.

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A DIET FOR PEPTIC ULCER

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The recent paper by Coleman[1], describing a new diet for peptic ulcer is noteworthy, because it is the first time in this country that an attempt has been made to adapt such a diet to the laws of physiology. As Pavlov was the pioneer in gastric physiology, so were Russian clinicians among the first to utilize the new knowledge in the treatment of gastric disorders. It may not be amiss, therefore, at this time to acquaint the readers of the Journal with a diet utilized by Jarotzky[2] of Moscow, who may be regarded as a fair representative of the Russian school. The diet is so simple that it may be carried out in the home, under the direction of a general practitioner, and in our hands the results have been very encouraging.

The treatment of peptic ulcer was first introduced in 1825-1838 by Cruveilhier[3], who argued that the ulcer must be treated like any other bleeding wound and be protected from mechanic, chemic and termic injury. To meet these conditions he and later Leube and Ziemsen[4] representatives of the socalled "Schonungstherapie" fed the patient exclusively upon milk. The milk curds, however, increases peristalsis, and the great bulk required to supply the necessary calories, dilates the stomach and interferes with healing.

Later the use of nutrient drip enemata came into vogue[5,6]. Absorption by this channel, however, was so poor and the technic so time consuming as to make the method impractical.

In order to furnish the necessary calories DeBove[7], of France, introduced his "suralimentation" treatment, and gave his patients pulverized meat through a tube. Einhorn[8] later introduced duodenal feeding, but neither method prevented traumatization of the stomach and both required hospitalization of the patient.

The diets of Lenhartz[9], Sippy[10] and Smithies[11], which allow milk, egg, bread, meat and fruit ignore the fundamental work of Pavlov which showed that the secretions of the stomach are exicted differently by various foods, and the frequent feedings demanded by the Sippy and the Smithies methods keep the stomach in a continuous state of peristaltic unrest. Thus the modern Russian school demands that in the treatment of peptic ulcer, *first*—gastric secretion be kept in obeyance, and *second*—gastric motility be reduced to a minimum, while at the same time the nutrition of the patient be kept at a high level.

THE JAROTZKY DIET

To meet the above conditions, Jarotzky feeds his patients from 10 to 14 days, exclusively upon egg white and butter. This egg white is raw and is neither salted nor whipped. It is never given with the butter, because the secretions of the stomach are increased by the combination. Wirshubsky[12] has shown that the raw egg white needs only one fourth as much gastric juice for chymification, as the equivalent of chopped meat, and Marbaix[13] states that the raw egg white leaves the stomach quicker than the boiled.

Lobasov[14] found that the secretions of the stomach are not involved at all by raw egg white during the first hour, though coagulated white causes an immediate response. This is probably a phase attribute, because Krgyskowsky[15] has shown that all solids, irrespective of their chemism increase gastric secretion.

Raw egg white is further a powerful astringent and has the property, par excellence

of fixing free acid, a property that is not shared equally by the whipped white, possibly because the whipping induces a change of phase, akin to coagulation.

Butter is given to supply calories. Upon reaching the duodenum it depresses the acidity of the chyme and closes the pylorus, Lintvarev[18], (Pavlov) and while still in the stomach, it stimulates the opening of the pylorus and causes the regurgitation of duodenal contents, which aids the fixation of acid (Boldyreff)[17]. Besides fats have an inhibitory influence upon the secretory process (Khizhin).[18] Instead of butter, any true vegetable fat may be given. Neither egg white, nor fat stimulates the so-called appetite secretion, "Igniting juice" of Khizhin)[19] because of their low taste value.

To minimize gastric secretion, no salt or water is taken by mouth. Ice is absolutely contra-indicated, because it has been shown that, following a short period of inhibition, the production of hydrochloric acid is increased thereby. On the third or fourth day, a glass of Vichy water or a half percent solution of sodium bicarbonate (Squibb) may be taken, because alkalies in dilute solution have been shown to inhibit the secretion of the gastric juice, when they are given one or two hours before meals. (Pimenov).[20] To maintain the fluid equilibrium of the body, normal salt solution is given by enema. No drugs are advised.

The following then, is a short resume of the treatment:

First day.....9 A. M., two raw egg whites.
1 P. M., 40 grams butter.
Second day...9 A. M., three egg whites.
1 P. M., 60 grams butter.

In this way the egg whites are gradually increased to twelve daily and the butter to 120 grams. On the third day, a glass of Vichy water is given, two hours before the first feeding, and the patient is instructed to sip it. On the twelfth day carbohydrate may be given, usually as mashed potato, farina or rice.

During the whole treatment, the egg-white should be given in the morning. No meat, soup or milk should be taken. Jarotzky allows cottage cheese, claiming that the constituent of the milk which increases the gastric secretion, remains in the way. It is also advisable that the patient remain in bed, and that he be isolated from all food odors to prevent phsychic stimulation of the gastric secretions.

I have used this treatment in eight cases of gastric ulcer, and found that the total acidity dropped from an average of 65 to 37 in two weeks. When carbohydrate was given, it averaged 39. After three weeks the free acid fell to 16, and the combined acid to 9. It is most important that, when the patient returns to a liberal diet, the acidity does not increase. In the first few days, the weight of the patient usually drops. Later, however, when carbohydrate and liquids are given, it increases, and at the end of two weeks there is usually to be observed, a gain of three to eighteen pounds.

The Jarotzky diet differs from that recently published by Coleman in the following particulars:—Coleman allows some water with the egg-white, and the latter may be boiled or whipped, and even salt may be added. As has been pointed out, heating and whipping alters the physical states of the egg-white in such a way that gastric secretion is stimulated. Water also increases the secretions, (Khizhin)[21]. In order to lessen the thirst sensation, water may be used to wet the lips, or it may be gargled, but should not be swallowed. Coleman also starts the treatment with a physic which further irritates the stomach, and his practice of having the patient fast for three or four days is objectionable.

The Jarotzky diet may be given on the first day, even to patients who are bleeding from ulcer. It does not emaciate the patient, and usually requires only two weeks for a cure. The biggest advantage is that it may be used in the patient's home under the direction of the family physician.

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PHYSIOLOGY OF THE QUARTZ LIGHT*

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The existence of every living organism on the earth depends upon the radiant energy from the sun. A large part of this energy is used simply in warming objects on the earth, but of far greater importance is that part which brings about chemical reactions.

Most of us, when we hear the term light, think of something that is visible. Instead we should think of it as an energy, very much like the energy of wireless telephone waves. In fact, except for a difference in lengths, the waves of light and of wireless are the same. Like the wireless, light waves are not only capable of being transmitted great distances—probably farther than wireless—but they may also be converted into other forms of energy at certain points. In the case of wireless, these points are receiving, or tuned stations. In the case of light they are sensitized cells. The wireless station picks up that particular wave length to which the instrument has been tuned and a record is made; but it must be remembered that there are an infinite number of wave lengths constantly passing the instrument that are not registered.

Comparable to the wireless receiving station is the retina of the eye. But the retina instead of being tuned to a special wave length has several tuning coils, or sensitized cells, and such a combination of these that it can receive the very numerous wave lengths which comprise the entire visible spectrum, yet it registers only a small part of the total spectrum. Those waves which comprise that part known as the invisible spectrum pass the retina without being registered as light. In the future it may be found that these waves do make a record, but the study of this invisible spectrum is an entirely new field in science and its extent is not yet known. It is known, however, that if the eye is exposed to ultra violet rays for a short time a conjunctivitis is produced and even blindness.

Another important sensitized cell, or part of a cell, which we may compare to the receiving station in wireless, is the chlorophyll of the leaf. This absorbs certain of the light waves and converts them into other forms of energy. The energy is stored as sugar, fat and protein. Not all of the rays that fall upon the leaf are used by it, however. It has been estimated that only 10 per cent of the incident light is absorbed. Nor is all of the acquired energy stored away in the plant; much of it is used at once in transpiration.

Chlorophyll and the retina of the eye are only two of the many examples of the sensitized cells which may be so aptly compared with wireless receiving stations. Undoubtedly there are many other such cells in nature about which nothing is as yet known.

Besides the receiving cells in nature there are the filters, by means of which the wave lengths can be differentiated. For example, a red pigment filters out of the long rays only. Glass, on the other hand, filters out the short rays which comprise almost the entire ultra violet part of the spectrum except the near end. Lead, sinc, and other metals each filter rays of different wave lengths. Chlorophyll pigment, as has been seen, absorbs rays of certain wave lengths and so may be used as a filter. Haacke[1] and Waller[2] have shown that if a leaf is placed over another and exposed to light the lower one will show no photosynthetic process as all the desired waves have been absorbed by the upper leaf. A simple way of demonstrating the photosynthetic process that takes place is to take a sunflower leaf, keep it in the dark over night, expose part of it to sunlight for about an hour, place it in warm alcohol, and finally stain with iodine. The part that was exposed to sunlight will show blue, due to the presence of starch, and the part not exposed will show no color. And so it happens with the lower leaf in the experiment. It takes no stain because the desired rays were absorbed in the filter. The amount of starch in the leaf varies from 6 per cent in the day time to 3 per cent at night, showing the dependence of this process upon the energy obtained from light.

This stored up energy, accumulated through the ages, and so familiar to us in the form of coal and oil, is the foundation of modern industry, and indeed, our very existence. As this energy is being slowly exhausted, methods of storing solar energy, especially that of light, will undoubtedly have a particular application in the future. Already, Moore and Webster[3] and later Baly, Heilbron and Stern[4] have synthetized formaldehyde by exposing an aqueous solution of CO_2 to ultra violet light in the presence of inorganic colloids. They also show that dilute solutions of nitrates exposed to ultra

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violet rays are covered into nitrates with an absorption of energy. This is the firts stage in protein anabolism.

At this point it may be interesting to mention some of the more common applications of ultra violet rays. In all paint and dye industries and in the manufacturing of cloth, the various articles are exposed to these rays and so tested in durability against sunlight. More recently ultra violet rays have been used in the study of new materials and it is probably through their use that the atomic scale will be reduced rather than increased. When metals are exposed to ultra violet rays they give off electrons, positively or negatively charged as the case may be. Zinc, which is negative, gives off a negative electron and becomes itself positive. Here we have light energy converted into kinetic energy, as witnessed in the electrons being discharged from the metal. Zinc requires a ray of certain wave length, but other metals require rays of different wave lengths for the same effect. Probably through such studies of their behavior under the influence of ultra violet rays some of our heavy metals will be found to be not true elements, but combinations of elements. It is also interesting to note that gold leaf, which has been negatively charged and thoroughly insulated, when exposed to ultra violet light, loses its charge.

In agriculture, also, much use may be made of the ultra violet rays. It is known that if lettuce is exposed to its light, a much heavier yield is given. Strawberries under the same conditions give an earlier crop, and the yield of cane sugar is heavier. On the other hand, if any of these should be overexposed to the rays, the resulting crop is much poorer both in quality and quantity.

Thus far we have considered only the photochemical and electrical, or the immediate reaction of the ultra violet light. It may be well to consider now some of the delayed reactions. Certain substances, when exposed to ultra violet light, absorb it and then give off a visible light which, of course, is of a different wave length. For instance, quinine solution, anthrocene and eosin, when exposed to ultra violet light give off a visible light and thus produce a fluorescence. These are examples of photochemical change with the storing of light energy and there is a delayed chemical reaction. Phosphorescence is an illustration of the same principle.

In considering what we have learned so far we note that only the light which is absorbed seems to produce any effect. After the important rays have been filtered, those that penetrate have no apparent effect, at least none that we are capable of observing at the present time. We have observed that the absorption may only apply to the very superficial layer of cells, but it is able to produce chemical changes in the entire general system, as, for instance, in the tree.

Ultra violet rays kill bacteria and fungi. Visible rays, on the other hand, do not ordinarily kill either of these, but they can kill bacteria in the presence of eosin. Eosin is otherwise harmless. This proves that there must be a chemical reaction between the eosin and the rays and then in turn the bacteria.

Fresh water crusteacea are also affected by the ultra violet light, becoming illuminated when exposed to its rays. The cyclops, if left in this state for a short time, becomes greatly excited and then lies motionless for hours if placed in the dark. When re-exposed to light, it again becomes greatly agitated. Certain fatigue experiments have been observed on the cyclops by ultra violet radiation. If the peripheral parts are exposed to the ultra violet rays, no exciting general effect is produced after a certain point is reached. If the peripheral nerves are cocainized, the results are still negative, but if some central anaesthesia like ether is used, the exciting effect is again present. This proves that there must be a photochemical reaction at the periphery that is responsible for the general systemic effect.

Let us now consider the effect of the rays upon human beings. When a patient is exposed to ultra violet light for a fairly long period he generally falls into a profound sleep. On waking he feels refreshed and shows an exhilaration which reaches its height in three or four hours time. But should he receive an overdose—perhaps toxic, he displays a dizziness on rising to his feet, and later nausea and vomiting. The pulse becomes rapid and the patient is often subject to a peculiar fright. Depending upon the length of exposure, one exhibits an erythematous flush in from one to eight hours time which may persist for hours or several days. This again may be followed by a branny or scaly desquamation.

Blood changes also take place during this period. Dr. Sadakata[5] and myself, as well as others, have shown that a general leucocytosis develops under the influence of ultra violet rays. As a rule there is an incerase of from three to five thousand in the cell count, reaching its height three or four hours after exposure to the light. The count

will generally stay high from eight to twenty-four hours. From differential counts, we have proved that the increase is polynuclear in type. In cases of rather marked secondary anemia, we notice an increase in the hemoglobin after prolonged treatment. Changes in the calcium content of the blood may also be produced. As a rule, if the patient is rachitic or his blood low in calcium a marked increase in the calcium content is shown after several treatments. But if the patient has a practically normal calcium to start with, no increase is noticed.

Another factor and one which has been most encouraging to us is the stimulation of the appetites in children who formerly have shown no desire for any kind of food.

Finally as a delayed reaction, we have brown pigmentation of the skin generally known as sunburn. This is not caused by heat, but by the ultra violet rays; the most marked burns being obtained in the ice fields and in the snowy Alps. As shown by Hammerstein[6], this brown pigment is a derivative of Tyrosin which is closely allied to the proteins. Here again we have a chemical reaction. The brown pigmentation is the delayed reaction following the photochemical reaction that takes place at the periphery. Secondary reactions may occur from the absorption of the pigment.

TECHNIC

In exposing a patient to the rays, most workers show a tendency to push the treatment. We ourselves see no advantage in this. We have shown that in the plant the cells can absorb only a limited amount of light, and the same no doubt holds true in human beings. In the treatment of neuritis or other local conditions, it might be pushed to the point of blistering the skin, but in this case the actual physiology is simply that of a counter-irritant and therefore in taking up the uses of the ultra violet light, I will not discuss this phase.

The light used in general treatment is usually set at forty inches. The child must be stripped and the eyes shielded with amber glasses to prevent conjunctivitis. He gets a general exposure both front and back every day. The length of time is an important question. We feel that there is no advantage in extending the entire exposure beyond thirty minutes and probably less time would be better. The initial treatment should be three minutes gradually increasing to a longer period.

We also use a water cooled quartz light with attachments for treating various pathological conditions of the different orifices of the body, but since our department uses it only in treatinf severe stomatitis and diphtheria carriers, I do not feel justified in discussing its possibilities.

USES

The ultra violet light is a specific treatment for rickets and has been shown by Hess and Weintock[7] and Powers, Park and Simmonds[8] have shown that in the absence of sunlight or ultra violet rays, animals develop rickets. Hoag[9] has nicely shown in his work that it is also a specific for tetany.

From both Hess's and Hoag's work it is obvious that the use of the light is indicated whenever we have a low blood calcium or phosphate. Thus, it has been used in cases of hypersensitive rhinitis, hay fever, and asthma. These patients seem to be benefited during the period of treatment, but there seems to be no permanent cure. Gerstenberger[10] has pointed out that there is a low blood calcium in pneumonia. In view of this fact, others have tried the therapeutic value of quartz light in treating such cases. The benefit derived from such treatment is still questioned.

It is used again in various skin diseases such as eczema, psoriasis, and simple infections of the skin. In these conditions, however, it is merely an aid. We have also found it valuable in conjunction with a diet in the treatment of secondary anemias.

A group of cases which have proved most interesting at present is that of children between the ages of eighteen months and three years who will not eat. We can find no cause for this lack of appetite. By treating these patients with ultra violet light, in many of them the desire for food returns and the results have been surprisingly good.

In all types of tuberculosis the light has been used with quite good results.

DISCUSSION

In going over the physiology of ultra violet light it must be apparent to all that it has a very definite effect upon plant and animal life. An absence of the light is distinctly harmful, but on the other hand over-exposure is not a good thing. It must be remembered, moreover, that these rays are essentinal to the healthy person as well as to the sick. It seems to me that such an important regulator of metabolism should not be prescribed merely for a particular disease, but should find its greatest use in preventive medicine. Dr. Cowie certainly sees into the future when he prescribes three minutes daily exposure to ultra violet light for all babies and children on his service. The three minutes in this case is the longest time that will fit in in an economic sense. It seems that some such regime is absolutely essential in this zone and in this stage of civilization. Most of our sunlight is filtered by the heavy clothing that most of

us wear. These facts are especially true during the winter months. In this way we have removed the natural rays and have made no attempt to supply a substitute. Hess and Lundagen[11] have shown that there is a definite seasonal tide of blood phosphates in infants.

CONCLUSIONS

Ultra violet rays are a very important regulator of metabolism for both plants and animals.

Leaving out their value as a counter irritant and in the healing of local wounds, the rays should have their chief use in medicine as a preventative.

The results are practically the same whether the source be an arc light, quartz light, or sunlight, except that in the winter time in this locality it would seem to be economically better to use some artificial means of getting the rays.

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IRREMOVABLE FOREIGN BODIES IN THE EYE*

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The technique of the removal of foreign bodies from the eye has been so thoroughly given by Haab, Risley, Jackson, Sweet, De-Schweintz and many others that it would not be profitable to take up the time of the section with a repetition of what these men have given. When, however, a foreign body can not be removed each case presents an individual problem, the solution of whirh is dependent upon many factors; therefore such cases must always call for the exercise of the highest medical and surgical judgment, and as a consequence the interest in these cases must ever be perennial.

The presence of a foreign body in the eye is a most serious condition and unless the proper medical and surgical treatment is carried out total loss is almost inevitable. If such a body is removable without serious injury to the delicate interior of the eye the gravity of the situation is reduced in proportion to the extent of the trauma and the presence or absence of infection. A correct diagnosis is therefore of the utmost importanse.

The subjective symptoms must necessarily vary greatly with the size and character of the foreign body and the nature of the injury to the eye. The patient most frequently gives a history of sudden more or less violent pain, following the striking of a piece of steel or iron with a hammer, cold chisel or other violent contact of a hard body with iron or steel, less commonly brass or bronze. In other cases there is a history of the explosion of fulminating caps, the victims most frequently being children who are playing with caps left about with inexcusable carelessness, by those who are using dynamite. When the patient has been injured by dynamite or by the explosion of the various war missiles the nature of the foreign body is so variable that the history is less helpful in the diagnosis. Dirt, splinters of bone, stone, wood and other substances are sometimes present; rarely bird shot enters the eye. Accompanying the pain there may be rapid or gradual loss of vision, hemorrhage, or escape of aqueous, lens or vitreous. Occasionally there is little or no pain after the first blow, especially when there is only a minute perforation of the cornea. Later, if not at once, visual disturbances usually develop, and often after two or three days, the severe pain of iridocyclitis, if infection of the anterior zone has taken place.

To determine the character and extent of the injury a careful, painstaking, thorough examination is necessary. Laceration and extensive wounds are at once evident. When an explosion has lacerated the neighboring tissues the injury may so overshadow everything else that the examination of the eye is perfunctory or superficial. In such cases, if cocainization is insufficient, the examination should be conducted under general anesthesia.

Often the external injury is so slight that it is easily overlooked. In such cases careful focal illumination of the fluorescine stained

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structures with the loupe and continuation of the examination with the ophthalmoscope is imperative. The cornea, limbus and epscleral tissues should be carefully searched for minute wounds. Here fluorescine is often of the greatest value. Behind the external wound it is not unusual to find a small hole in the iris, especially difficult to see if it is situated near the iris angle or in the pupillary zone; a slight notch in the pigment border may be the only evidence that the iris is injured. If the injury is in or near the pupillary zone the lens capsule or lens is almost always injured. Toward the periphery, however, the missile often misses the lens altogether. When the lens is injured the evidence of the presence of a foreign body is most convincing; if however the lens has escaped injury only the ophthalhoscope, supplemented in many cases by an X-ray examination, will reveal its presence and location. In the majority of cases the intraocular tension is lowered, therefore careful palpation of the globe should not be neglected. If the foreign body is of considerable size or one of the larger vessels of the iris or ciliary body is injured the anterior chamber may be so filled with blood that only an X-ray examination will reveal the location of the object. The reaction following ocular injury is dependent to a large degree upon intraocular hemorrhage, injury to the lens, and infection. If hemorrhage is present in the anterior chamber it is at once evident; if in the vitreous chamber little or no red reflex can be seen with the ophthalmoscope.

Infection, if it occurs, usually shows itself on the second or third day. Bacteriological examination may reveal its nature, but inflammatory exudates in the wound or anterior chamber, punctate deposits on the posterior surface of the cornea, changes in the color or texture of the iris, and marked ciliary injection are easily seen if looked for, and are almost certain indications of infection and consequent iridocclitis of a serious nature. Dilation of the pupil is of great value in the diagnosis. When inflammatory reaction has resulted posterior synechia will be revealed and in any case the examination of the lens and vitreous chamber greatly facilitated, or anterior exudative uveitis directly behind the iris may be exposed.

When hemorrhage or lenticular opacity is not too extensive the foreign body may be frequently seen with the ophthalmoscope with a plus seven, more or less, before the sight hole. When seen most foreign bodies appear as glistening objects, situated rather well forward, in the inferior portion of the vitreous, although it is not unusual to find the object enmeshed or otherwise supported, in the posterior portion of the fundus. Here it will be found necessary to use a strength of lens adapted to the patient's refraction. If the missile can be seen its magnetic character can often be determined by bringing a magnet quite close to the eye and watching for movements. If the object is sufficiently opaque to cast a shadow an X-ray examination not only removes doubt as to its presence, but with a Sweet or some other localization apparatus its situation can be accurately determined and invaluable information obtained as to the procedure to be adopted for its removal. Occasionally the pull by a giant magnet brought close to the eye will elicit pain and thereby aid in the diagnosis, but there is a possibility that a change in position and further injury may be thus produced, therefore, unless it is an old case this method should rarely be resorted to.

The classification of foreign bodies as removable or irremovable depends in the individual case upon the thoroughness of the examination and the care with which the history is taken. Nearly all foreign bodies anterior to the lens and many of those inbedded in the iris or zonula are removable. Unless the patient is unusually stoical a general anesthetic is generally advisable if the object is to be removed with a minimum amount of injury. Even when the object is magnetic a great gain in safety may be obtained by this means in these cases.

Foreign bodies situated wholly within the lens are benign as to the integrity of the globe and may be removed, if desired, with the lens, after all inflammatory reaction has subsided; as may also some of those situated in the anterior vitreous, at the same time that the cataractous lens is removed.

When, however, the object lies wholly within the vitreous a successful removal depends to a very large extent upon whether it is magnetic or not. Nearly all fragments of iron or steel are magnetic, the only notable exception being manganese steel. Occasionally non-magnetic objects may be removed, when they can be accurately localized by the X-ray, by cutting directly down upon the object, but probing about in the vitreous is about as dangerous as leaving it alone.

As early as 1624 Wilhelm Fabry extracted a piece of steel from an eye with a magnet after all other attempts had failed. Fabry quaintly says that the suggestion for its use was made by his wife and that she held the magnet while he held the lids apart. The

eye rapidly recovered.* The next recorded successful case is that of Dixon of London, removed in 1859. The introduction of the electromagnet by Herschberg in 1877 and of the giant magnet by Haab in 1894† brought this method to the notice of the whole profession and its adoption has been rapid and general.

Unfortunately, however, all magnetic objects are not properly removable. Cases of serious iridocyclitis or other infectious processes rarely regain useful vision and unless the other eye is also blind usually no effort should be made to remove the foreign body. Eyes which do not see because of simple amblyopia are not necessarily useless. Useful vision often develops in such eyes if the other eye is lost.

The classification of those cases which are often seen some weeks or months after the accident is not so easy. Some of these foreign bodies may be removed where they can be accurately localized and their location is favorable. Epecially to be recommended for these cases is the scissors operation described by Edward Jackson.‡ The removal of missiles which have passed through the dangerous ciliary zone is generally not advisable. Occasionally, however, the wound is small and clean, the reaction is slight and infection does not occur. If the object in such cases is small its removal may be attempted by the magnet. If iridocyclitis does not follow the operation the eye may be saved.

The prognosis must necessarily vary with the character of the injury, and the gravity of associated conditions or complications. That a foreign body in the eye does not necessarily entail loss of vision is shown in cases of war injuries, dynamite explosions, fulminating cap injuries, etc., where one eye has been destroyed and the other eye contains irremovable objects; in some of these cases partial sight, even useful vision has been retained. Also it seems to have been the experience of the late war that foreign bodies in the eye do not produce sympathetic inflammation. This trouble seems rather to be caused by infectious uveitis.

Irremovable foreign bodies may be classified as (a) those which are non-magnetic; (b) those too large to remove without destructive laceration; (c) those inclosed in organized tissue and found to be irremovable; (d) those in which the ciliary zone is seriously injured; (e) all cases in which infection has occurred unless the other eye is already blind.

(a) In general, it may be said that the presence of a non-magnetic foreign body in the eye is an indication for enucleation, if however, the fellow eye is very poor or blind, if the injury is slight, if no infection follows, if the foreign body be wood, stone, lead, or glass enucleation is not always the best procedure. It is true that the viterous usually degenerates, vision is lost, and the eye atrophies, but vision is not always lost, therefore, whether the treatment be radical or expectant depends upon the associated or modifying conditions. In the case of copper or steel in which chemical reaction always takes place the provnosis is less favorable. Glass is born better probably than any other object; stone or wood better than steel, copper, brass, or bronze. In any of these cases, however, an effort should be made to save the eye if the other eye is useless. (b) When the foreign body is too large to admit a safe removal, or when the globe is seriously lacerated, the eye will in any case be lost and enucleation is the only proper procedure. (c) When a foreign body has been present in the vitreous a lonp time and no reaction has resulted it is usually encapsulated and its removal is probably more dangerous than keeping the eye under observation. If symptoms develop enucleation should be done unless it is a seeing eye and the other one blind. When the injured eye is blind, atrophied or painful enucleation is the commendable procedure. (d) When the seat of injury is in the ciliary zone it should never be forgotten that such wounds are dangerous. The development of infection, uveitis, or the slightest signs of sympathetic irritation indicate prompt enucleation. If such injury is large enucleation should be done at once, unless the other eye is blind. (e) When infection has occurred no time should be lost in attempting to save the eye; unless the other eye is without sight enucleation is imperative.

When it is considered wise to treat an eye containing an irremovable foreign body expectantly the patient should rest quietly in bed, in a darkened room, a brisk cathartic administered, and forty to sixty grains of asperin given daily. Ice compresses for twenty-four to forty-eight hours are frequently helpful. During the treatment daily blood examination for increases of the large mononuclear leucocytes should be made. Locally, the eye should be kept clean, the pupil dilated with tropin, mercurochrome or argyrol instilled, and a protective dressing applied, as in post operative cases. On the slightest sign of infection or uveitis salicy-

*Am. Ency. of Oph. Vol. VII P. 5133.

†Arch. F. Augenheil. Vol. 68, P. 1.

‡Jackson, Scissors Magnet Extraction Jour. Am. Assn. 1909 Vol. 52, P. 1985.

lates after the method of Harold Gifford should be given, meanwhile remembering that we have from ten days to two weeks of practical freedom from danger of sympathetic ophthalmia. Should the inflammation continue, or increase, or signs of sympathetic irritation in the other eye develop, enucleation may still be done in those cases where useful vision in the other eye is present. If on the other hand the reaction diminishes and the eye steadily improves the chances of saving it are good, provided chemical reactions from metalic substances do not set up destructive degeneration.

CONCLUSIONS

To recapitulate (1) blind eyes containing non-magnetic foreign bodies in the vitreous chamber, those having serious wounds in the ciliary zone, those presenting serious or extensive lacerations and as a corollary in which the foreign body is large, infected eyes, and those suffering from severe iridocyclitis demand immediate enucleation. Attrophic or degenerative changes also indicate enucleation.

(2) When the vision in the injured eye is not destroyed and the object non-magnetic an attempt may be made to save it, if the injury is insignificant, provided there is little or no reaction and infection does not develop. In the case of magnetic bodies the magnet should be used. The removal of the magnetic foreign body in old cases depends upon localization and the location. Blind eyes showing no signs of degeneration or infection may be retained, but the prognosis is better if the foreign body is magnetic or removable.

(3) When the foreign body is not removable the consequences of loss of time and suffering during a prolonged convalescence, and inability of the patient to remain under observation weigh heavily in favor of enucleation.

(4) Seeing eyes containing non-magnetic foreign bodies may be treated expectantly if there is little or no reaction or degeneration, or in any case if the other eye is blind. Simple amblyopia is not blindness.

(5) When an attempt is to be made to save the eye rest in bed, salicylates, atropin and post operative surgical treatment guarded by frequent blood examination should be rigorously followed.

(6) All eyes showing signs of sympathetic irritation demand immediate removal of the injured eye, unless vision is still present and the sympathizing eye is blind.

(7) A foreign body retained within an eye does not of itself set up sympathetic inflammation.

DISCUSSION

Dr. Edward Jackson, Denver: I think the paper has very well covered both the diagnosis and the consideration of whether foreign bodies are or are not removable, and also in a general way the treatment. Perhaps the most profitable discussion would be to take up just a few special cases that might be considered either as irremovable or as on the border line.

One class of case is the non-magnetic foreign bodies. That is a large class and several different kinds of substances fall into that class. Metallic foreign bodies, both copper and brass, are supposed to be inimical to the future of the eye and give a very bad prognosis when left behind. I have seen a fragment of copper cap left in the vitreous for six years after an accident without any noticeable change in the eye and without causing irritation; but ultimately we did enucleate the eye because of degenerative changes that occurred. That case, and some others of a similar nature, although not running so long a course, have impressed me with the probability, not certainty, that perhaps copper so imbedded in the eye is not justifiable for haste in deciding that the foreign body should be removed, or in taking such a step as enucleation. An eye may seem to be absolutely blind immediately after an injury, you may get no evidence of light perception, and this may be due to a dense or an extensive clot, and some eyes do develop some light perception. So in that class of cases, if laceration or occurrence of infection does not hasten the decision, you may wait a little while before deciding whether such an eye should be enucleated.

Stone, of course, varies. There is a great many different chemical compositions that come under that head. Some of them we do not know what the character of stone is, and some of them can surely be tolerated for long periods. Iron can be tolerated for long periods without giving rise to evidence of siderosis. I remember one case where a particle of steel was suspended in the remnants of the lense capsule and iris and was visible 28 years after the injury, and at that time was just beginning to make trouble. Hirshberg reported one case 30 years after injury, and there was then no trouble; but within two years afterwards he had to enucleate the eye from the effects of the metal.

So while we have time to consider and plan the treatment of such eyes, we must not give a favorable prognosis. I recall one case in which a stone was imbedded in the lens, a small fragment of stone, which caused no trouble for 25 years after the injury. The man was injured away up in the interior of Wyoming and it was three weeks before he could get any help at all. His eye gradually quieted down and remained quiet, and from that sort of body one would think it would remain quiet the rest of his life. That, of course, was not an irremovable foreign body, but such cases influence our prognosis with reference to irremovable foreign bodies.

There is another class of case that Doctor Slocum did not specially allude to, and that is where foreign bodies are small and so numerous that it is impossible to remove them. These come generally from explosions. I recall one case particularly that had an useful eye for ten years afterwards, although the eye was slowly degenerating, in which there must have been fifty minute particles of sand and rock in the cornea and iris. This was after a dynamite explosion.

With reference to these cases, I think the prognosis would be influenced a good deal by the surroundings—the place the injury occurs. I have

seen several of these that have occurred from dynamite explosion of sand and rock in mining operations in the Rocky Mountains, and I have been struck in all of them with the absence of infection, and even among the coal miners of Colorado infection is rather the exception. Certainly it is not the rule from small fragments of coal. Whereas in Philadelphia the cases I saw were invariably infected. I hink a large proportion of those were seen immediately after injury at the mine were found to be infected. I suppose that during the war such injuries occurring in Flanders and northern France were almost always infected, but certainly in the Rocky Mountains infection is rare. In this particular case to which I have alluded where there were so many minute particles of rock imbedded, to have taken them out would have destroyed the cornea almost certainly, and very likely the conjunctival sac.

Another class of injuries is much less common now than when they used the old black blasting powder. Sometimes a large number of these grains yould become imbedded in the eye, even in the cornea. The recommendation that I made a good many years ago and the plan I practiced was, and I think still is, a good one in some of these cases—not to attempt to pick the grains out, but to use a galvanic cautery and destroy the cornea. That ought to be done a few days after the injury.

There is one class of foreign bodies that are located and proved to be irremovable—the penetrating magnet foreign bodies that pass into the sclera and even pass out of the sclera. I think that today the greatest error with reference to the localiation of foreign bodies is in regard to these bodies that are about the sclera. The nearness of the source of the rays with which the picture is taken influences, of course, their divergence at the eye. If the tube is rather near the eye that divergence has a magnifying effect on the eyeball, so that with the most accurate localization, if that divergence is not taken into account, foreign bodies will appear to be within the sclera or eyeball that are really outside. There have been quite a number of these cases reported and I think it is the greatest error in localization. In some such cases persistent efforts have been made to extract with a magnet when such extraction was impossible. The case had better be left alone, or if any effort was made it should have been outside the eyeball, by going back and with a pair of forceps dislodging the body and bringing a magnet in contact with it and removing it backwards.

With reference to the scissors magnet extraction mentioned, the value of that depends more largely than we realize when we first devised it (and I think the failure to emphasize that has prevented its more general use perhaps) upon having the blades of the scissors in the direction of the magnet force. It is essential that the blades of the scissors should conform to the line of force. You must note where the tip of your magnet is, and then the direction of the blades fo the scissors must conform to that line. Scissors magnet extraction is essentially an attracting of the foreign body so that it will push in front of it any tissue that is firm enough to resist—push that tissue into the jaws of the scissors. If the foreign body is not pushed directly toward the jaws of the scissors, but lies alongside, the tunnel the blades makes goes alongside the foreign body and does not come into contact with it, and there is failure to extract. Several of the cases reported in the last few months illustrate that. In one hree trials were made with the scissors magnet, with failure. At a subsequent trial the tip of the magnet was introduced as far as possible into the opening, and succeeded. The tip of the magnet when it was brought into close contact with the foreign body drew the foreign body through. But if the blades of the scissors are carefully kept in the direction of magnet force it makes a tunnel to the foreign body and after you feel the foreign body against the scissors it may be worth while to make two or three snipping movements to divide the tissue and then the foreign body will slip off towards the scissors.

Dr. Edward J. Bernstein, Detroit: Will you say how far you go in saving the globe, even though there is no hope of saving the sight, provided the ciliary portion is not involved?

Dr. Edward Jackson: I should sacrifice the globe and not take any chances of sympathetic ophthalmia. I think, however, as Doctor Slocum has pointed out, that we are not hurried in the first two weeks perhaps, and I should not sacrifice the eyeball at that time unless there is very complete disorganization of it, or the importance of shortening the patient's stay in the hospital is to be considered. I think we can wait until the type of inflammation begins to be fairly manifest before deciding that question. I think that injury, even foreign body lodged in the ciliary region, does not necessarily cause sympathetic ophthalmia. What does cause sympathetic ophthalmia is a certain type of inflammation, and we can generally wait until that type of inflammation occurs before deciding in doubtful cases. The possibility of saving the eyeball is important, and if the eye remains quiet, no matter how badly the globe is injured, it can be left. I think the danger of sympathetic ophthalmia in these cases is one that the surgeon is not justified in assuming. It belongs to the patient, to the corporation and the insurance company, and the question must be put up to the patient or the representative of the company. There is no reason for us to go out of our way as surgeons to assume an insurance risk that does not belong to us.

Dr. Charles H. Baker, Bay City: There are a few points that personal experience has taught me, and one is in regard to the magnet. It is well known that magnet force lessens in proportion to the square of the distance from the tip of the magnet. That is the cause of the failure of the magnet to do its work. In one or two cases I have had of a penetrating steel particle passing through the ball and lodging in the sclera posteriorly, it being of a ragged type, would not come out with the magnet at all. In those cases I have taken a steel probe and passed it through the vitreous and in contact with the foreign body, put my magnet in action, and released the mass immediately. If your magnet is in contact with the foreign body you are bound to get it. If it is removed from the foreign body by any distance, you may not get it.

In one case I had a piece of steel lodged in that way which gave pain on the action of the magnet and demonstrated it was there, but it would not move. I passed the steel probe in that way and it was loosened from its attachment, and it immediately jumped in the direction of the opening. The opening was to the outside of the ciliary body, but it did not have the line accurately and it came behind the iris. I had a new problem then—a foreign body which had been removed from its original location. In that case the only thing that could be done was to make a corneal incision and iridectomy and bring the foreign body out through the opening thus made, which I did, and saved the eye.

As to probing into the vitreous, I think the foreign body has already made an opening into the vitreous, and if you can follow the track of that

with your steel probe you will not materially increase the danger of losing the eye from loss of vitreous. So it is quite important to know in a general way, if you are not able to see the foreign body with the ophthalmoscope, the direction the foreign body took when it entered the eye, and I make it a point always to inquire of the patient what he was doing, what position he was in, and try to ascertain relatively whether he was looking in the direction the foreign body entered, and the position of the eyeball and the missile. In that way you can get a pretty good line on the angle at which the foreign body entered the eye.

Dr. Frank L. Ryerson, Detroit: That brings out the fact of how impossible it is frequently to exactly locate a foreign body in the eye. A boy was hit in the eye with a BB shot, and I saw him a few days after, at which time there was a considerable amount of oedema and laceration. X-ray showed a foreign body in the eye 8 mm. or more back of the cornea. Knowing the shot was nonmagnetic, it became a question of what to do with the eye. There was loss of vision with light perception. The suggestion was that the eye be removed. I thought the same thing, but I had another X-ray made which showed the shot to be within the iris. I sent him to the hospital, and under general anasthetic I extracted the shot from near the inner canthus of the lower cul de sac. That left the eye in, and the boy had some vision afterwards.

Dr. Don M. Campbell, Detroit: The subject which Dr. Slocum has so conservatively presented is one of great interest because of the large number of injuries that occur, especially in industrial centers such as Detroit, and also because of the important questions that arise as to what can be done with these various types of cases.

The diagnosis of the situation of the foreign body within the eyeball, as Dr. Jackson has pointed out, is sometimes very different. It depends a good deal upon just how accurate an X-ray diagnostician you have at your disposal. We have been fortunate in Detroit in having an X-ray expert who has been able to very accurately locate these foreign bodies and we very seldom, if ever, have much difficulty in their management if we have his help.

The thesis of the paper is "irremovable" foreign bodies. Dr. Slocum, however, has gone outside his declared thesis, and perhaps it may be permissable to refer to some other questions. The question of the possibility, or probability, of impending sympathetic ophthalmia is one of the very greatest importance, and Doctor Jackson has referred to the type of inflammation or infection that occurs following the injury. That is really the crux of the matter, as brought out by Fuchs in his investigations. He has given to us a type of pathology following injury within the eyeball that very definitely lays down a line of pathology that is usually to be followed by sympathetic ophthalmia. It has appeared to me in a general way that if we consider the type of infection or inflammatory reaction within the eyeball in connection with careful physical examination of the eye that in most cases it will correspond to Fuchs' pathology of the eye that is likely to produce a reaction in the sympathizing eye. That is a point of great importance in our opinion in determining what we shall do with an injured eye, whether we shall enucleate or not.

Then again, the blood picture that Doctor Slocum referred to is a matter of great importance in making a diagnosis and in making up my mind as to what I shall do in an individual case. I am aware of the fact that this large mononucleosis is not a pathognomonic picture; it does not mean impending sympathetic ophthalmia, but it enables us perhaps to make up our mind in a doubtful case. I have had an interesting experience with mononucleosis. I had a case of sympathetic ophthalmia following cataract operation in which there was a blood picture that showed an increased mononuclear count up to 15 or 16 per cent. In that case enucleation of the offending eye, which was not done until after the sympathizing eye was well under way to sympathetic ophthalmia, did not result in reduction of the mononuclear count. It stayed up as long as the sympathizing eye remained inflamed. On the other hand, I have had two cases in which there was apparently impending ophthalmia, in which enucleation was done early, and within 48 hours after enucleation the mononuclear count reached normal.

Another thing Dr. Slocum referred to that is of value, and that is the perforation of the iris by small bodies that go through the limbus. It is true that it is sometimes difficult to see the perforations when they are near the limbus or near the pupillary border. One thing that has been of great value to me in determining these perforations is transillumination. Place the lamp well back and throw the light from behind. These perforations, even very minute, will show as a red spot the same as a light coming through the pupil.

I would like to refer to two cases of diagnosis or location of foreign body that seemed to me very interesting. One was a man who had a wound of the eyeball, we thought a perforated wound, and we found a foreign body. We had him X-rayed and the X-ray diagnosis was that he had a foreign body located as we figured it out from a Sweet chart, in the neighborhood of the ciliary body. We subjected the body to the magnetic pull of a giant magnet, but could not elicit pain, nor could we demonstrate there was foreign body in the eye. In looking over the individual a small black spot was found on the edge of the lid. It looked like the end of a cut-off lash, but on investigation we found it was a foreign body just on the edge of the lid, and coming in contact with eyeball it was easily localized as being within the eyeball or ciliary region.

We had another case in which the X-ray did not give us the proper help, where we could see a mass of some sort in the iris. We had him X-rayed and the report came back negative. We were not satisfied, so we took a magnet and placed it in front of the cornea, turned on the current, and we could get movement of the black spot, so we concluded it was foreign body. By manipulation we finally dislodged and removed it. The explanation of that, it seems to me, might be that this being a small foreign body in the iris, and there being free movement, that at the time the picture was taken there was contraction of the iris and the foreign body moved and therefore did not make the proper impression upon the X-ray plate. It offers the practical suggestion that in such cases it might be well to immobilize the pupil, either by a miotic or mydriatic, at the time of examination.

One other instance of localization of foreign body was that of a man who had a small wound of the eyeball, in which there was found a green and black spot on the lens. It looked as if he had a foreign body in the lens. He was X-rayed and the report came back that there was no foreign body. The X-ray was repeated, still negative; and yet we could see this black spot. It might easily have been mistaken for a pigment spot or a small dislodged bit of pigment. However, the case went on to complete cataractous changes and finally in the course of time the cataract became mature and was extracted three weeks ago. The foreign body was in the lens, and as a matter of curiosity

I exposed it to a giant magnet, but it would not attract. It was friable—I think it was perhaps some sort of carbon.

We always use local anesthesia in the removal of these foreign bodies, if we can secure the co-operation of the patient. One of the most important things in the removal of intraocular foreign bodies is promptness of removal. I have learned the lesson many times that hours may make a difference in the result, so in our work with foreign bodies within the eyeball very prompt removal is one of the important things.

Dr. George Slocum (closing): In closing I wish to thank Dr. Jackson for his very kind discussion. He is one to whom we have all been accustomed to look as the final authority in all questions pertaining to diseases of the eye.

Dr. Jackson mentioned numerous foreign bodies seen in the eye. I think that the experience of some of the surgeons during the war was that some of the explosions produced numerous foreign bodies in the eye, and in some of these the other eye was destroyed, but the eye in which there was a foreign body retained useful vision. Of course the ultimate outcome depends upon time and experience. It has been our experienc that dynamite explosions are less liable to produce infection than fragments of metal.

The matter of localization technic I purposely avoided. The bringing in of the outside subject was for two reasons. In the first place, as a background, and in the next place that I might give opportunity for the Section to discuss points of general interest in relation to foreign bodies in the eye, even though I did not bring it into the paper itself.

In regard to the removal of foreign bodies by probe, the remarks of Dr. Jackson were quite pertinent to the subject; but you may not have noticed that it was probing non-magnetic foreign bodies, not magnetic, that I warned you against. I still believe that magnetic foreign bodies can be probed for.

The direction of the path of entrance can frequently be seen by the ophthalmoscope if one is careful. If you run through several numbers of lens, particularly around 7, you will be able in many cases to detect the path which the foreign body took. I think you will also find that the foreign body frequently goes to one side, that it does not follow the path it followed before entering the eye.

The subject of sympathetic ophthalmia was not entered into only as it might offer a means of warning and prognosis. I avoided it because it is too large a subject for this paper. But I was very glad that some of the members took it up and developed their ideas on the subject because they are always of value in a meeting of this kind. We are here to help one another, so these points are of value. You may not have noted that I spoke of sympathetic irritation. Sympathetic irritation is not sympathetic ophthalmia or sympathetic inflammation, as you all know.

In regard to the magnet pull in front of the lens, I do not think that is important. If the foreign body is in front of the lens you will easily demonstrate its presence by the magnet. I must repeat my statement, however, that I believe that a general anesthetic is in many cases necessary, because children do not co-operate. I have had several cases of children where, if general anesthetic had not been used, the foreign body would not have been removed. Sometimes adult patients will not co-operate—they squeeze the eye or roll the head; but with a general anesthetic I think you will secure better co-operation.

THE TREATMENT OF CANCER OF THE COLON*

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Cancer of the colon is of interest to surgeons because it is so common, and because of the high mortality which may result from operation. The stomach is probably more often the seat of cancer than any other portion of the intestinal tract. Primary cancer is extremely rare in the duodenum, and is infrequent in the small intestines; in the oecum it again becomes common, and the incidence increases with the downward course of the colon, probably being greatest in the sigmoid and rectosigmoid.

Because of the virulency of the organisms in the contents of the colon, and because in many cases in which operation is performed, there is either partial or complete obstruction, the removal of cancer of the colon is often followed by fatal results. The virulency of the infection in the bowel walls surrounding the growth probably contributes to the production of the high mortality associated with this type of case. The thinness of the bowel wall and its limited blood supply make healing less rapid than in other portions of the intestinal tract, and when there is gaseous distention before safe healing has taken place, leakage may easily occur along the suture lines, and result in fatal peritonitis. On the other hand, patients who survive early operation for malignant conditions, have an excellent chance to remain well, as it is often possible by wide resection, to remove not only the growth, but also the glands draining the affected bowel. The end results following operations depend largely on the extent of the disease at the time of the operation and, as in cases of cancer in other regions, are much less satisfactory when the glands are involved at the time of the operation.

The operability in a given case in which no distant metastasis can be demonstrated depends largely on the ability and experience of the surgeon, and the amount of risk he is willing to assume. Certain growths, which through inflammatory changes have become fixed to the surrounding structures, are operated on with difficulty, and operation should be attempted only by surgeons who have had considerable experience with this type of case. The mortality decreases and the percentage of operable cases increases with a surgeon's experience in dealing with the condition.

*Read before the Section on Surgery of the Michigan State Medical Association, Mount Clemens, Mich., Sept. 10, 1924.

Modern methods of diagnosis by the aid of the X-ray have greatly increased the number of cases in which an early diagnosis can be made, and it is thus often possible to make a definite diagnosis of malignancy when the clinical symptoms are vague. The early clinical symptoms are intermittent pain, associated with gaseous distention and increasing constipation. Often the pain is crampy in character, lasts for a short time, and as a rule, is relieved by satisfactory evacuation of the bowel, or by the passage of gas. It may also be relieved by a sudden change in the location of the gases in the intestines. Blood and mucus may appear in the stools, early in the course of the disease, and often there are alternating attacks of diarrhea and constipation. In the latter stages of the disease patients often become anemic and cachectic, an dlose markedly in weight and strength. Profound anemia often occurs early in patients suffering from cancer of the cecum and ascending colon. X-ray examinations should always be made in such cases, and if a filling defect is shown, the diagnosis is fairly certain.

The operative mortality may be reduced by carefully preparing patients for the operation, by performing the operation in stages if there is obstruction, and by careful treatment after the operation. The possibility of obstruction should be carefully considered, as the preparation differs according to the amount of obstruction present.

Patients without obstruction are probably best prepared by administering a purgative, like castor oil, about three days prior to the day set for the operation, and an enema each night afterward. After the purgative has been given, the patients should be kept on liquids, such as water, tea, ginger ale, lemonade, orangeade, chocolate, and sugars. All proteids are withheld. For twenty-four hours before the operation, a teaspoonful of paregoric should be given every three or four hours, to diminish the intestinal juices and thus produce constipation. If patients are prepared in this manner, the intestines will usually be empty or contain solid fecal material at operation, and it may therefore, be performed with a minimal amount of soiling from fecal material. The complete change, before the operation, to a small residue carbohydrate diet and liquids tends also to change the flora of the intestinal bacteria.

Patients who show evidence of partial obstruction should not be purged on account of the danger of precipitating acute obstruction. The usual preparation consists of an ounce of mineral oil three times a day, and an enema night and morning for from three to five days before operation. During this time the patients are kept on liquids, fruit juices and sugars, as is suggested in cases without obstruction, and are given paregoric for twenty-four hours before the operation.

If there is acute obstruction, nothing is to be gained by pre-operative preparation, and early operation for the relief of the obstruction offers the patient the best chance. Radical operation in such cases results in a high mortality, and it should not be performed. The bowels are usually filled with liquid material which teems with virulent organisms, and it is almost impossible to operate without considerable soiling. There is infection and edema in the bowel walls for a considerable distance beyond the growth; these tend to prevent satisfactory healing, and operation under such conditions is usually followed by fatal peritonitis. A considerable difference is noted in the mortality following radical operations in non-obstructed and partially obstructed cases, and for this reason preliminary operation for the relief of even partial obstruction should always be performed, if possible, before radical resection is attempted.

The type of operation selected in a given case should depend on the location of the growth and the amount of obstruction and infection. Occasionally cancer occurs without obstruction, and without inflammatory reaction surrounding the growth. Nothing is to be gained by the two stage operation in any such cases; and by performing a radical resection, and an enterostomy or appendicostomy at the same time to relieve the gaseous distention after the operation, the procedure may be quite safely carried out. It has been my experience that the mortality is lowered in cases in which there is obstruction and infection, if it is possible to perform the operation in stages. A short-circuiting operation, or an enterostomy or colostomy, is done first to relieve the obstruction. After two or three weeks the inflammatory reaction surrounding the growth will usually almost subside, and the growth will present an entirely different appearance. A radical resection may then be performed with much greater safety.

In cases of cancer of the cecum, ascending colon and hepatic flexure, in which there is no obstruction, a one-stage operation for resection of the ascending colon with a lateral anastomosis between the lower ileum and transverse colon, may be performed. It seems safer to make, at the same time, an enterostomy in the lower ileum and transverse colon, may be performed. It seems safer to make, at the same time, an enter-

ostomy in the lower ileum with a smaller catheter. If there is obstruction I usually obtain the best results by making an ileocolostomy between the lower ileum and the transverse colon, and resecting the ascending colon after two or three weeks. At the first operation, the ileum should be cut across distal to the anastomosis, in order to divert the passage of the bowel movements from the affected bowel and thus place this portion as nearly as possible at rest.

Primary resection for cancer of the transverse colon carries a high mortality; it may be done more safely by making a temporary enterostomy or appendicostomy at the same time. On account of the mobility of the transverse colon, it is often possible to remove cancer in this portion of the bowel by an operation of the Milkulicz type. The first and second stages of the operation may be performed at the same time. When possible, an appendicostomy or a cecostomy should also be performed in order to prevent postoperative gaseous distention.

It is difficult to use the Mikulicz type of operation if the growth is located in the region of the splenic flexure or in the descending colon as far down as the beginning of the sigmoid flexure, on account of the fixation of this portion of bowel. If there is no obstruction, a primary resection with a temporary enterestomy may be performed. If there is obstruction, a colocolostomy or a colosigmoidostomy, followed by a resection later of the affected area, probably is the safest operation. The sigmoid loop is usually quite mobile, and an operation of the Mikulicz type can ordinarily be satisfactorily performed for a malignant growth at this point. Walters and Buie have shown that the mortality from operations of this type is much lower than that following primary resections.

In cases of growths at the rectosigmoid involving the upper rectum, in which form 2.5 cm. to 3.7 cm. of the rectum above the peritoneum in the bottom of Doublas' culdesac is free and unaffected, a primary resection may be performed, if no obstruction is present, and an end-to-end anastomosis made over a tube, as has been suggested by Balfour. With obstruction, it is probably best to perform first a colostomy in the sigmoid flexure, later a resection of the growth with an end-to-end anastomosis over a tube below the colostomy, and at a later time closure of the colostomy. In like cases with involvement of the rectum to a point below the peritoneum in the bottom of Douglas' culdesac, it is best to make a colostomy, and after twelve or fourteen days remove the entire rectum, rectosigmoid and a portion of the sigmoid by porterior resection.

Although the operative procedures I have suggested require more than one operation, and necessitate the patient's longer stay in the hospital, they seem justifiable because of their greater safety.

The postoperative care of patients should be directed toward the prevention of gaseous distention and peristalsis sufficiently long after the operation to allow satisfactory healing. In my experience this is best accomplished by withholding fluids by mouth and rectum for a period of from four to six days. During this time patients are given sodium chloride solution subcutaneously in amounts from 2000 to 2500 c.c. a day. During the first thirty-six or forty-eight hours morphin sulphate in 1/6 gr. doses is administered every four hours and then, because some patients become quite irrational under the further use of morphin, codein in 1 gr. doses is substituted and continued for one or two days longer. The length of time patients are kept under this treatment depends largely on the postoperative reaction. If the temperature and pulse remain normal, patients are usually allowed to take water by mouth after four days, and the subcutaneous injections are discontinued. Water alone is continued by mouth for about two days, when fruit juices and sugars are added. If a sharp postoperative reaction occurs, the pulse is the best index as to when fluids should be allowed by mouth, and if the pulse drops and remains down, usually about the fourth, fifth or sixth day, water is given by mouth and the sodium chloride subcutaneously, discontinued. Under such treatment patients remain remarkably free from pain and gaseous distention. Its only disadvantage is the accompanying thirst which is not relieved by fluids given subcutaneously, even in large amounts, but only by stimulation of the salivary glands; without such stimulation patients are likely to develop parotitis. Relief is most satisfactorily obtained by biting sweet pickles or lemonms, and by rinsing the mouth frequently with cleansing mouth washes and orange juice. Certain patients obtain considerable satisfaction by chewing the gum prepared for diabetics. The prevention of gaseous distention and peristalsis, which is so satisfactorily accomplished by this type of treatment, is of utmost importance in attaining the greatest immediate postoperative safety.

When patients have gained sufficient strength to permit the use of X-ray, they are usually given a series of X-ray exposures over the site of the operation, and over the glands draining this area.

DISCUSSION

Dr. Max Ballin, Detroit: Cancer of the colon has become a real departure in surgery, because cancer of the colon metastasizes very slowly, due to the lymph glands of the mesentery, and there radical operation even at a late stage frequently gives lasting results. To get such lasting results two things are important: First, diagnosis and, second, therapeutic measures, as Dr. Sistrunk outlined. In the diagnosis it is necessary to operate at times before we have even an X-ray confirmation of the diagnosis. All of us have had our knocks from this if we wait for complete showing of the cancer where the symptoms are very suggestive, and these patients should have been operated earlier. The reason the X-ray sometimes fails to give a conclusive picture is because some of the cancers do not encroach early on the lumen. They may start from the frequent diverticula around the sigmoid and in those cases do not show early in radiograms. Later, as in any other surgical chapter, we should not wait for the whole syndrone of symptoms—blood in the stool, emaciation and so on, before we operate. The conclusive diagnosis often should be made with the symptoms of mild obstruction, peculiar accumulations of gas which remind one of gall-stone colics, or colic of adventitial type. Where these exist we are justified in early section and often find carcinoma of the colon where the X-ray has not confirmed the diagnosis.

In the treatment, the results have become good on account of the careful preparation, and I think many surgical features have been introduced which allow primary section, or added features which render primary healing possible. We all realize that anastomoses low down will not heal as readily as in the stomach, and for this reason colostomy will often save a case that otherwise would go on to fatal termination. Mikulicz may have saved a good many lives, even if two or three operations are needed later on, by bringing the loop outside the abdomen and letting it slough. The Mikulicz operation has not been accepted generally, as it should be. The Mikulicz operation for the low sigmoid cancers is also commendable, or a primary colostomy followed by resection later will often give good results.

Altogether, it is not advisable to be too radical at the first step. In cases of intestinal obstruction primary resection should never be considered. The great difference in the size of the bowel, the portion distal to the obstructing cancer being collapsed, makes such a resection always a failure, and primary colostomy will make this also operable after the obstruction has been overcome by this means.

Dr. Louis J. Hirschman, Detroit: It is not my intention to stress any of the points on which we all agree. Dr. Sistrunk has covered the subject admirably, and Dr. Ballin has stressed some of the points, so I will devote my time to some differences of opinion, in which I may wish some information.

Before going into the practical technic, I may say that my feeling regarding the diagnosis of cancer of the colon without the X-ray confirmation rests upon one or two symptoms. Given a patient who has recurrent indigestion with more or less retention, with a feeling of obstruction, that patient should be looked at with suspicion and all methods which we have at our command should be used to find out if it is carcinoma of the intestine or something else. These two symptoms justify the surgical examination. Then you can do a colostomy or appendicostomy or whatever you wish through your incision, and do the resection later. The symptoms of indigestion and gas, I think, are enough to warrant treating the case as suspicious. The appearance of blood, emaciation and so on are not symptoms of cancer at all. They are symptoms of metastasis. If you get the cancer early enough, before the bleeding, then there is a chance of doing something by radical surgery.

I think we all agree that the two-step, or even the three-step operations are safer than the single, radical operation .

One of the most important things is the choice of anesthetic. Oftentimes the preliminary preparation, the cleansing of the bowel, the building up, is often nullified by prolonged ether anesthesia. If we can operate under any combination of gas or ethylene, or any combination we will do more to preserve our patient's recuperative power than in any other way. This was not mentioned, but I think it is very important.

I will confine my remarks to the rectosigmoid and rectum. I admit that it is a pretty surgical procedure to excise a carcinoma of the sigmoid which comes down to within one and a half inches of the rectum but does not involve the rectum, it is pretty, but not safe, for while we know that carcinomas of the colon metastasize slowly and that the mesenteric glands in this region are not so plentiful as in other parts of the body, we know that it does spread not only upward, but downward, and I feel that one inch, or even one and a half inches is not sufficient margin for safety when excising. Therefore, I do not satisfy myself with this, but bring down and excise everything from three, four or five inches above the growth down to the anal canal, and then bring down the sigmoid and anastomose that to the canal. I think the immediate mortality is a little higher, but there is better assurance against recurrence by this means. I have seen sections of a carcinoma of the rectum where no evidence of spread could be detected, but microscopic glands three or four inches beyond have definitely shown metastases.

Another thing is the Kraske operation. I am very sorry that they have not seen fit as yet in the clinic from which Dr. Sistrunk hails to get over the Kraske operation and discard it. We see every once in a while a patient who has had a Kraske operation, but I have yet to see a patient who is happy or comfortable following this operation. I have seen some patients who have returned from the Mayo Clinic, where they have had the most competent Kraske operation that can be performed, but no one can bring down the sigmoid and anastomose it to the coccyx without having a very tender area against which the patient is forced to press when he sits in such a seat as these, for instance. I have seen patients who could not sit down because the sacrum comes in contact with such a chair. I have seen patients come in who have had this sacral colostomy with the stool entirely beyond control, and not only that, but prolapse of seven or eight inches. I think that is all wrong. If one is operating to get exposure one does not get any better exposure by the sacral than by the abdominal. There you have an excellent opportunity to see what you are doing and can immobilize the gut much better from a small anterior point than a large posterior. Moreover, why not put the colostomy where the patient can see it and keep it clean, not where he has to sit upon it. I have seen cases where the Kraske operation has been performed where the actual recurrence of the growth involved the raw surface of the sacrum. For these reasons, and many others, the fact that it is a long and bloody operation among them, I do not believe in the Kraske operation. We believe in the abdominal-perineal, the abdominal-vaginal, whether one wishes to save the sphincters or not.

In the big hospitals in London that are devoted entirely to this type of work, in one they do the perineal almost entirely, first using the inguinal colostomy. In another they do the abdominal-perineal

entirely, and in every case, or almost every case, they do a permanent colostomy. If you are doing an operation for life only the permanent colostomy is of great value. If for preservation of function, then the abdominal-perineal is the thing. In one there is 16.8 per cent mortality, and in the hospital where they do the combined operation the death percentage is 20.

Dr. Clark D. Brooks, Detroit: There are one or two points I would like to mention. First, the operability of patients. I am greatly impressed with the fact that many apparently inoperable cases, judging by blood pictures of certain types, may get well by certain types of operation. I have had patients with 40 per cent hemoglobin, absolutely inoperable if we did not know that by proper teamwork and a proper type of operation such patients can get well.

We have preferred in cancer of the transverse colon to do a preliminary anastomosis and then follow three to six weeks later with removal of the cancer. It is astonishing how, with no shock at all, the patient will have an operation for cancer of the bowel, by anastomosing the cecum to the sigmoid. A lot of these patients are turned down that should have this operation.

I was much impressed with the Mikulicz operation. These patients no longer need to die from one great big operation, and not from the three operations. No operation I know of is safer than the Mikulicz type. The first step is nothing more than exposure and bringing the bowel up. The second step is not done until the patient is in good condition, but all of them may be done by getting the patient into good condition.

In many cases cancer may be diagnosed early if the doctor will put his finger in the rectum. Many more cases would be diagnosed if a barium enema were given, for this shows in 95 per cent of cases at least a diagnosis of obstruction, with a tentative diagnosis of carcinoma. A proctoscope can be used and should be used, but is neglected every day, and patients go on suffering from carcinoma because they are not properly examined. They are often neglected until late symptoms occur.

I was much impressed with what Dr. Sistrunk said regarding operative and post-operative treatment. We have felt in every case of colonic cancer that not only should we practice the treatment which the doctors mention post-operatively, but that we should do it at the time of operation. I believe that especially during the first stage of the operation we should give the patient hypodermoclysis on the table, and we practice it. The patient gets one pint of saline during the operation and I am sure that in many instances this will save their life until the other things can be done. Without the one pint of saline and the second dose of morphin the patient often will not live for further procedure.

I wish to emphasize what Dr. Hirschmman said regarding the Kraske operation. I know it is not done much, but I think it an operation which should almost never be done, except where one is doing the perineal operation. I do not believe that anyone who has seen the sacral anus would ever want one done on himself. I believe one very seldom does a Kraske operation *per se*, but some operators may do it when they do a perineal operation, or in combination with it. I see no reason for ever having a sacral anus.

I think that many of us who are afraid to tackle these cases properly, or tackle them by the abdominal route to get at the glands and find the liver infected —I believe that many of those patients would be alive today if the surgeon would do a preliminary operation, then close the wound, put the patient up in the lithotomy position and do a proper perineal operation. Those who have seen Gant and Hirschman operate have been much surprised. Patients can have the bowels move or have control of them after an operation of this type is done. Because the surgeon has the abdomen open he often goes ahead and does another type of operation which is not proper in many cases of low rectal carcinoma.

Dr. Walter E. Sistrunk, Rochester Minn., (closing): I appreciate the discussion very much. It seems to me that in my own experience the X-ray has been accurate in probably 95 per cent of the patients who have come for diagnosis. Occasionally we see a man with a well marked carcinoma, or a palpable tumor, in which the X-ray is negative and if we feel suspicious we do not wait for the X-ray to be positive, but explore on the symptoms. I think that is perfectly right.

I made a mistake by mentioning the word "Kraske" a while ago. I did not have it in the paper, but meant by it to indicate a posterior operation. We do not do the radical Kraske any longer. We do what we call the posterior resection, which is very similar, but we do not make the sacral anus. We do a colostomy first and then a posterior resection in 95 per cent of the cases, and then take the coccyx out because it is impossible to separate the tissues from the sacrum unless this is done. Of course, some of these patients suffer afterward, but we have found that the two-stage operation, doing the colostomy and after two weeks doing the posterior resection, carries a very low mortality, not more than 2 per cent, and the percentage of cures is very high. In operation for cancer of the rectum in which an attempt is made to preserve the sphincter, we have found this very unsatisfactory. It is almost impossible to bring down extra-perineally the bowel and have no stricture later. We have also found the percentage of recurrence in these cases very high, for in order to remove the amount of tissue which one should remove it permits a recurrence so we have practically discarded this procedure. Even in the upper rectum we make no attempt to preserve the sphincter because the chance of recurrence or stricture, which later necessitates a colostomy, is not great.

ETIOLOGY AND PREVENTION OF SO-CALLED CATHETER CYSTITIS*

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The fact that the phrase "catheter cystitis" is in more or less common use in medical literature may be judged to be evidence that the catheter is still regarded as having an etiological relation to infection. As we believe that this view is in violent contradiction to all the evidence, it seems wise again to put forward the evidence in the hope that it may carry with it conviction.

That there are sound observers who, during the last decade have regarded the catheter as guilty is evidenced by the publications of Brocks, Rathbun and Mills, all of whom cling to what appears to us to be an outworn dogma.

In arriving at an opinion upon this question it is perhaps wise to set forth the conditions which appear to favor the production of blad-

*Read before Section on Surgery, M. S. M. S. Annual Meeting, Mt. Clemens, Mich., Sept., 1924.

der infection and discuss the evidence of their real effect.

THE INTRODUCTION OF BACTERIA INTO THE NORMAL BLADDER

This matter has been very fully investigated by many observers over a period of more than thirty years; in 1890 by Guyon and Albarron, in 1890 by Rovsing, in the same year by Melchior, in 1913 by Hess, in 1913 by Bauereisen, in 1915 by Barber and Draper, in 1917 by Faulds, in 1918 by David. All investigated this question experimentally and came to the conclusion that infection of the bladder cannot be produced by the simple introduction of pathogenic bacteria into the normal bladder. We have, however, thought it worth while to repeat this work and one of us, (J. L. L.) has, during the past year, conducted an elaborate series of experiments on male rabbits bearing upon this question. We are forced to the conclusion of the previous investigators that the normal bladder is not infected by the introduction of pathogenic bacteria.

It is proper here to point out that the clinical evidence is entirely in accord with the experimental. It is a matter of common clinical knowledge that the catheterization of the healthy bladder in the absence of obstruction is entirely without objectionable consequences. It is further notorious that the introduction of instruments even more likely to introduce bacteria, such as the cystoscope and the more or less prolonged manipulation associated with the cystoscope examination, is quite impotent to produce cystitis in the normal bladder. That the introduction of the catheter and particularly of larger instruments, such as the cystoscope, inevitably introduce bacteria must be clear. On this point, however, we would submit a study which one of us, (H. C.), made some years ago on the bacteriology of the bladder urine of patients with normal bladders consequent upon cystoscopy. In this study the urine was examined carefully before instrumentation and all cases showing evidence of bacteriuria were excluded. Of the remaining cases, with normal urine, examination was made of the urine two and four days following the cystoscopic examination. In all of these patients following cystoscopy the presence of bacteria in notable numbers was shown. The bacteria diminished by the fourth day and as a rule disappeared by the sixth day. In none of the cases examined was there any evidence of cystitis as a consequence of the examination.

This evidence appears to us to require the conclusion that, both experimentally and clinically, the introduction of bacteria into the bladder and even moderate traumatization of the posterior urethra and the bladder are incapable of producing cystitis.

INTRODUCTION OF BACTERIA FROM THE UPPER URINARY TRACT

In these days when the urinary tract is frequently subjected to searching examinations we see a considerable number of patients with infection of one or both kidneys with a considerable variety of bacteria in whom it is possible to decide whether or not infection of the bladder has taken place. A comprehensive discussion of this question would take us too far afield and it is sufficient to point out in this connection that the urologist meets with a large number of patients in whom infection of the kidney exists, in whom, therefore, the mucous membrane of the bladder is continually subjected to potential infection from this source, but in whom infection of the bladder (cystitis) has not occurred. In fact, it is interesting to note that the bladder mucous membrane may resist infection by bacteria constantly reaching it from the kidneys over a long period of time.

RETENTION OF URINE WITH OR WITHOUT OVER-DISTENTION OF THE BLADDER

A large amount of experimental work done in connection with the attempt to decide the condition under which infection of the bladder occurs has lead many investigators to the production of retention of urine in the course of their investigation. Those investigators, who have been previously named, have unanimously come to the conclusion that cystitis can with regularity be produced in animals by the production of retention of urine with over-distention of the bladder. Many of these observers have also noted that the intentional introduction of bacteria is by no means essential to the production of cystitis. On this point it has seemed to us wise to repeat the work of other observers and one of us, (J. L. L.), in the course of the experimental work above referred to, produced retention of urine in a series of animals and studied the results. In all the cases studied cystitis resulted and in none were bacteria intentionally introduced. It, therefore, seems quite clear that retention of urine with over-distention of the bladder can be expected in experimental cases regularly to be followed by cystitis.

This is, of course, a finding which fits closely with clinical experience. It has for years been recognized that the catheterization of the over-distended bladder, particularly where that over-distention had been produced, was followed by infection in a high percentage of cases and it is in this group that the luckless catheter has acquired its bad reputation. A more important question concerns the cases in which residual urine of moderate amount exists without over-distention. This condition is found commonly in individuals with moderate grades of urethral obstruction due generally to changes in the prostate, but occa-

sionally to stricture of the urethra. It also occurs with some frequency in women with considerable degrees of relaxation of the pelvic floor, as a rule, consequent upon damage occurring during labor. Small, though not insignificant amounts of residual urine are relatively common and it has been observed that in this group infection was particularly prone to occur.

We incline to the view that the natural history of the infection which develops in these two groups is not precisely similar.

In the cases with obstruction and over-distention the cystitis which follows upon evaculation is due to the prepared soil, the bladder wall being oedematous, soggy and having punctate or even massive hemorrhage into its substance. Here bacteria, which are always available, find a soil well suited to their growth. (For a fuller discussion of this view see The Doctrine of the Prepared Soil. Reprinted from The Canadian Medical Association Journal, September, 1921.)

In the cases without over-distention, but with residual urine there is also a prepared soil, but not so well prepared. In them we regard the residual urine as an important factor. It is to be remembered that the urine itself is a most excellent medium for the growth of bacteria and particularly of the colon bacillus group. These bladders are never entirely empty and the bacteria find there a congenial environment removed from the rush and bustle of the normal periodically-emptied bladder from which they are constantly evicted. Here they can at their leisure multiply, which they do at an astonishing rate, and work their will upon the defenseless and weakened mucous membrane of the bladder. In these cases, therefore, the clinical evidence jibes with the experimental evidence and supports the view that retention of urine with or without over-distention is a most essential factor in the production of cystitis.

GROUPS OF CASES IN WHICH SO-CALLED CATHETER CYSTITIS IS OF COMMON OCCURRENCE

The so-called catheter cystitis occurs in those groups of cases in which retention of urine with or without over-distention of the bladder has occurred. In these, catheterization is not infrequently followed by infection. We have already shown that it is the retention and not the introduction of the bacteria with the catheter which is the essential etiological factor and it, therefore, remains to discuss the management of the groups of cases in which catheterization is indicated. For convenience these cases may be divided into the three groups.

1. Those in which the retention is due to organic lesions of the bladder neck or of the urethra, or in which the floor of the bladder has, on account of damage to it's support, sagged below the level of the outlet. This group, therefore, includes the obstructing lesions of the prostate, stricture of the urethra and some cases of cystoscele in the female.

2. Those in which the mechanism of urination is disturbed by faulty enervation due to organic lesions and retention of urine results. In this group will fall the bladder disturbances of cerebrospinal syphilis, of myelitis of organic origin, of the congenital errors of development resulting in spina bifida and of the lesions of the spinal column due to trauma, tumor or tubercle.

3. The so-called reflex retention of urine commonly seen after surgical operations occasionally with severe injury.

The scope of this paper will not allow us to discuss in detail the management of cases occurring in the first two groups, since we wish chiefly to discuss the care and management of reflex retention of urine. Suffice it to say that in the cases occurring in Group 1, infection can be avoided, or when established, can only be cured by treatment of the lesions of the bladder neck, of the urethra, or of the pelvic floor. The treatment is surgical.

The group of cases occurring as the result of organic lesions of the spinal cord can as a rule not be dealt with surgically. In the great majority of cases the function of the bladder sphincter cannot be restored to normal, catheterization in the presence of residual urine becomes inevitable and infection is unavoidable. In fact, it is notoriously true that patients with organic lesions of the nervous system resulting in retention of urine die of infection of the kidney rather than of their original lesion. Did space permit we should be glad to discuss the management of the bladder in cases of fracture of the spine since it offers an interesting field for speculation as to the results of treating these bladders without catheterization, but we regard this as outside the field of the present paper.

THE MANAGEMENT OF REFLEX RETENTION OF URINE

As above stated, this is defined as that form of retention commonly seen after surgical operations, particularly those in the general neighborhood of the bladder, very commonly seen in obstetrical practice as a consequence of labor and occasionally seen with severe trauma, such as that producing fractures and particularly when associated with shock, in which no surgical operation is involved. The precise mechanism of the production of this type of retention is not entirely clear. It is, of course, due to interference with the normal functioning of the reflex arc and involves both the higher and lower nerve centers. There

is some reason to believe that in the cases occurring after surgical operation the anesthetic itself plays a part, to some extent, by affecting the secretion of the urine, and to some extent by clouding consciousness and in this way upset the normal machinery. It is, however, fairly clear that the anesthetic is not wholly responsible and the occurrence of pain which distracts attention from normal sensation is probably also a factor. It is, however, not necessary to have worked out an entirely satisfactory theory of the etiology of this condition to be entirely prepared successfully to deal with its consequences. The outstanding facts with which we are here concerned are that retention of urine does occur under these conditions and that there have been two schools of thought in regard to its management. The older school held that the catheter was primarily responsible for the results and consequently postponed its use to the latest possible moment. The other school, which is essentially the modern one, holds that the catheter is not a limb of Satan, but an innocent bystander who has been unwarrantably besmirched as to its character and accused of crimes with which it had no connection. We believe that the experimental evidence above referred to and also the clinical evidence is entirely sufficient to warrant the dogmatic statement that the catheter in and of itself is quite powerless to do damage. It is, we think, abundantly clear that it is the prepared soil resulting from retention and over-distention which is the sole causative factor. Thus the avoidance of cystitis in these cases boils itself down into the avoidance of over-distention. We feel quite willing to say, on the basis of experience which, with one of us, (H. C.), has extended now over a period of more than fifteen years, that if over-distention of the bladder be in fact avoided in these cases of reflex retention, that cystitis will not result. An exception should perhaps be made of the cases occurring in women with relaxed pelvic floor in which some residual urine has probably been existent for a long time. In these people infection may occur in the absence of over-distention if the complete emptying of the bladder with or without a catheter is not insured for a considerable period. We believe that the evidence warrants the conclusion that in this whole group of cases it is not the use of the catheter, but its avoidance which should properly be charged with the resulting infection.

On these grounds we would suggest the following plan for the management of all cases of reflex retention of urine. When occurring after surgical operation or in obstetrical practice where an anesthetic has been used, it may be assumed that urine will be secreted at a considerably slower rate than the normal. One may regard the normal urinary output of the normal individual under normal condition of temperature, whether within or without, as about one and one-half ounces per hour. In the patient who has been the subject of a surgical operation the fluid intake is as a rule below normal. In the operation itself the anesthetic will have largely checked the acticity of the kidneys during the period of the operation. The fluid intake following operation will be much below normal. Taking these factors into consideration, it is safe to assume that the normal rate of urinary output will not be reached much under eight hours. In order to avoid over-distention it is necessary to come to some agreement as to the capacity of the average bladder. Now it is notorious that the bladder capacity varies enormously with the individual, but we are concerned chiefly with the least, or minimum normal capacity, rather than with the unusually capacious bladder which was perhaps more common prior to the 18th amendment. We are probably safe in assuming that no bladder not previously diseased will become over-distended with less than 10 ounces. We have, therefore, thought it proper to lay down as a working rule for our assistants and associates that the bladder, after operation or injury, should not be allowed to fill up to a point beyond 10 ounces. On the basis of the conditions above suggested governing the secretion of urine under these conditions it is fairly safe to assume that 10 ounces of urine will not have been secreted in less than 12 hours following the beginning of the operation. Assuming, therefore, that the operation be done at 8:00 in the morning, our experience leads us to believe that it is safe to assume that the bladder will not have become distended before 8:00 in the evening. We have further come to the opinion that in the average patient a quantity of urine approximating 10 ounces will have been secreted at some time between 12 and 18 hours after operation. The period, therefore, with which we are chiefly concerned is this 6-hour period. The individuals most intimately associated with patients at this stage in their recovery, generally the nurses, will soon learn to estimate by the sensations of the patients, by their general condition and by the way in which they are taking or have received fluids the time at which the bladder is likely to contain 10 ounces. We have been in the habit for some years of instructing our nursing staff that the use of the catheter in the undistended bladder is free from objection and consequently they are urged to employ it in all patients in whom they suspect that the bladder is becoming distended during the period from 12 to 18 hours after operation. It has been our observation that acting upon these instructions our nursing colleagues have been able to empty the bladder

when it contained from 8 to 9 ounces with great regularity and in a very large series of cases managed in this way no case of infection has occurred. In contradistinction to this group we have seen in a few individuals in whom catheterization had been postponed, acting upon the older theory of the avoidance of the catheter, so that the bladder was found to contain from 12 to 16 ounces, the withdrawal of which was followed by infection which in some cases has proved troublesome.

We submit that unless it is proposed to deny all of the experimental and clinical evidence the case for the early use of the catheter is very strong. We further think that the time has arrived when those who would avoid the catheter and trust to the forces of nature to empty the bladder must assume the risk of over-distention. Should this occur cystitis will follow in a fair per cent. For these cases of cystitis we believe that the physician and not the catheter is responsible and that he who postpones what he regards as an evil day must be prepared to take the consequences and pay the price.

There is considerable evidence accumulated during the last ten years to show that the doctrine that the use of the catheter in this type of retention necessarily leads to a continuance of its use over a period of some days is not founded upon the facts. It is probably true that where the use of the catheter was postponed until over-distention and stretching of the bladder had occurred, continued use of the catheter was thereby favored, but we think it is not true that where the bladder is relieved of its contents before over-distention has taken place that the continued use of the catheter is likely to be necessary.

In closing we would particularly draw attention to the group of cases above referred to in women with a relaxed pelvic floor. In these patients it is probably true that small residuals are fairly common. In them the avoidance of infection will most certainly result from the continuance of catheterization until the general tone of the bladder, and perhaps of the patient, has returned to normal following the operation. In this group of cases it is probably safer to continue catheterization, if necessary, for many days rather than to risk the occurrence of infection in the presence of small residuals.

DISCUSSION

Dr. H. W. Plaggemeyer, Detroit: It is proverbial that when Dr. Cabot gets through there is very little left to be said, but I wish to mention one point about opening the bladder. Dr. Cabot has brought out the fact that the normal bladder is invulnerable to opening from without and without. The other types of bladder he speaks of have a derangement of circulation which is the primary factor in cases of infection. I think, as he said, the atmosphere has been very cloudy for a number of years on this subject. Distention is derangement of circulation, and that is the primary factor of infection.

I wish to qualify one thought and that is in regard to one type he spoke of in fractures of the spine during the war, and in other traumatic injuries to the spine, and in tabes and tumor. In these three types we have an absolutely atrophic picture in the bladder, and aside from tabes the picture is one and the same. We have dilatation of the posterior urethra, the verum montanum lies out in the floor of the bladder, there are large trabeoulae and the cross section of the bladder is increased four to five times. It shows muscle contractility, showing the ability to take care of the upper end of the ureter and the kidney. We have had many cases of this type with eight cases of tumor of the spine in which the picture was always the same. We must consider this type of case as a decentralized bladder. Sherrington, in his dog experiments, decentralized the bladder; in sixty-two instances he did not catheterize and in none of those dogs did he, up to six or eight days, find an infection. These findings were corroborated by other workers.

The practical point I wish to make in this connection is this: I agree with Dr. Cabot in regard to reflex distention and so on, but in these people we found at autopsy that every single one of them died of pyelonephrosis, without any exception.

The point I wish to bring out in conclusion is this: It seems to me that all these cases of spinal injury which mean a chronic atrophic bladder should be left alone. In the army every one of these men began to pass their water when they were left out in the battlefield, the last within forty hours and the earliest within twelve hours. They all established paradoxical incontinence of urine. In spasmodic incontinence try to keep the catheter out of the bladder, because you are instituting infection and they all succumb. You say they will die anyhow; that is true, but they do establish paradoxical incontinence.

I agree with Dr. Cabot and think he has given us an opportunity to be optimistic in regard to postoperative retention, but the spinal types, I will repeat, should be left alone.

Dr. W. F. Martin, Battle Creek: I have heard Dr. Cabot speak many times on this and other subjects, but I do not believe I have heard him speak so dramatically as he did this morning. He has certainly done a great deal to elucidate this subject of catheter cystitis. I am sure I was raised in the same school he was and was taught the same as he was that it was a terribly dangerous thing to use a catheter, but in our work we have found that it is much less dangerous to use a catheter systematically and regularly than to put it off until the last moment. There are many problems. Even when you practice regular catheterization in the operative cases if you make it a rule to catheterize every eight to ten hours, and with that rule you tell the nurse that if the patient's bladder becomes distended or painful, or if he has a strong desire to urinate she shall use it before the time, even then once in a while you will get an infection and in studying these cases you will find that it is usually the type of case Dr. Cabot has spoken of. Either the patient has a cystocele or a bladder neck obstruction and has suffered from obstruction for some time before this event.

We at one time started to experiment and did bacteriologic examinations in the routine way to see whether they showed any systematic evidence of infection, and we found that in the catheterization of these patients cystitis very often developed. This was not the fault of the nurses, for I know the nurses were careful. In studying these cases following the catheterization it was always proved, particularly in the women, that there was a cystocele or

something which interfered with that bladder emptying itself. In the male bladder, if you catheterize a man with a small prostate you will often get a residual, but if not, the danger is nil.

I think we have the evidence as presented by Dr. Cabot that it is not dangerous to use a catheter if it is used carefully, except in the case of certain diseases, with paralysis of the wall. In that case we have found, as he has said, that it is better to follow them up and see that the residual is not allowed to remain, that the patient's bladder is kept empty until we have established measures to increase the circulation of the bladder, and to asepticize the urinary tract as well as we can.

I would like to hear what Dr. Cabot's experience has been regarding the value of the retention catheter where patients suffer from residual, in preference to the frequent recatheterization.

It is our rule in making bladder examinations, or when we have to institute catheterization following operations, to begin treatment of the cystitis immediately. We give methylene enemas, see that the patient's feet are kept warm, and apply heat to the pelvis, treating the cystitis immediately after the catheterization has begun, and find that this lessens the tendency to the development of retention.

Dr. J. G. R. Manwaring, Flint: In those lesions of the spinal cord where the destruction is complete we have no difficulty in leaving them alone, but in those cases where it is incomplete where the motor function is disturbed we get into a good deal of trouble. They have tremendous pain, and I would like to know what Dr. Cabot would suggest in those cases. It is this particular type of case in which we meet with trouble.

Dr. William E. Keane, Detroit: I think the type of catheter we use, particularly in the prostatic case, has much to do with infection. I think the soft catheter will often slip into a prostate that otherwise is difficult to catheterize with the usual type of cather. We have many times seen cases that the doctor who has brought the case said he was unable to catheterize, and when we looked at what he was trying to use for a catheter it was easy to understand why he could not.

The use of a very weak percentage of cocain or novocain before catheterizing these patients the first time will enable one to slip the catheter in very readily and prevent trauma, which is a very important feature in the production of these infections.

Dr. Hugh Cabot, Ann Arbor, (closing): I am glad that Dr. Plaggemeyer brought out the points that he did in regard to the treatment of these paralytic bladders, for I think that is a very important and great step in advance. I think Dr. Plaggemeyer may have left you with the view that all you have to do is to leave these cases alone.

Dr. Martin has raised a very important point. You have to leave them alone, but is very hard to do. You think they are going to burst, but they do not. Why, I do not know. I went through, during the war, what might be called the development of this view which Dr. Plaggemeyer has brought out. In the early days in the British forces most of those people were catheterized, most of them up the line at the clearing station. Then an order was issued which suggested that it would be wise if the bladders in all these patients should be opened at once, so for nearly a year at all the clearing stations all these patients with transverse lesions of the cord had their bladders opened. They did just as badly. Then came the view, from a group of British neurologists, consultants to the army, that these people might be left alone. I remember they used to come to me and say, "Cabot, old man, I think they are going to burst. Will they last?" I told them that they would not burst, but it was very hard to leave them alone.

I think a section like this is the place where this doctrine should be driven home, for it is not the hospital surgeon who sees these cases first. Most of the cases I see today have been catheterized, at least nine out of ten have been catheterized, on more than one occasion.

The development of the traumatic bladder is a more certain and troublesome business. If they have been catheterized once or twice I am always inclined to send for the fellow who did it and ask him to keep on doing it. If they have never been catheterized, it is easy.

I have seen the cases to which Dr. Manwaring referred, with the incomplete spinal lesions in which the bladder will not work, but will squeal. My usual method is to treat them by cystotomy, more or less permanent. You can put in a tube and they will be more or less comfortable. I think this particular group is damaged less than by the use of the catheter. It is a very interesting group. I have often wondered if it is not best to make the lesion transverse and call it a day.

Dr. Martin alluded to the routine catheterization to be carried out after operation at eight or ten hours. I think we are concerned here with quantity of urine rather than hours, and I have been led to doubt whether the bladder has a watch in his pocket. He does not yet know when he is supposed to be full, and I have thought it wiser to keep close watch of the twenty-four hour output and advise the nurses that sudden death would occur in their family if there was more than ten ounces at a time. Of course, they will always put down nine and a half, being sure what will be the consequences. I think the catheterization of these patients every twelve hours was bad, and that we should deal with questions of amount rather than questions of time.

I am entirely in accord with Dr. Martin's view that we should deal with cystitis by beginning the treatment very early, but I am inclined to begin it earlier than that. I am reminded of the scene that occurred in the surgeon's room at the Massachusetts General Hospital when Dr. Richardson said that they should operate on every case as soon as the diagnosis was made. James Elliott said, "If you wait for the diagnosis they will die. Operate before the diagnosis is made." I think we want to begin treating the cystitis before it occurs. Treat it before operation. For years I have made it the rule in all cases that seemed likely to have reflex retention, in women particularly, to put them on urinary antiseptics and see that it comes through before operation. I am sure it is wise to assume that we may have to catheterize, that they may have some residual, and guard against this before operation. I think that will diminish the already diminishing cases.

I think the needle catheter has a distinct place, largely in that group of cases in which catheterization is necessary over long periods and in which it is objectionable. In those people you know the bladder is always empty. We always have to face a certain amount of urethritis, but so far as I know it is never important, never serious. It always disappears when the cause is removed. I have no fear of the retention catheter as a cause of permanent damage to the bladder, and would rather use it than to catheterize a patient in whom the procedure is very uncomfortable three to five times in twenty-four hours.

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OXYGEN THERAPY AND MEDICATION IN THE TREATMENT OF PNEUMONIA IN INFANCY AND CHILDHOOD*

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Pneumonia in its various forms is the most common serious disease met in pediatric practice. With all our advances in medical science, it still remains among the few diseases in which the mortality has not been appreciably affected by treatment. Laboratory investigations have not developed any specific, such as is now available fo rdiphtheria and a few other infections diseases, consequently our treatment is symptomatic. The indications are to sustain life and relieve distress until the natural course of the disease has run.

Probably the most important elements in the treatment are the general measures summed up under the headings of rest, mental as well as physical; skillful nursing; pure fresh air; proper diet; forced fluids; control of the bowels; hydrotherapy; applications; change in position and finally symplomatic treatment administered according to the indications as they arise and the patient's general condition. Death is due to exhaustion or to toxic effects in the respiratory and circulatory centers. "Clinically the battle in pneumonia resolves itself about these two systems." If there is very little cyanosis or dyspnoea and the pulse is good, volume and tension, and not too rapid, our patient is doing well; if the opposite exists, we know that the outcome is uncertain.

Assuming the above viewpoint, I wish to discuss some of the measures directed to the relief of the strain on the respiratory and cardio vascular systems, especially the early and extended use of oxygen and medication to be used to support the heart and circulation, in the belief that these measures, more carefully carried out, should have an apreciable effect upon the mortality in this serious disease.

Means and Barach state that the respiratory strain results from circumstances that the pneumonia patient is simultaneously confronted with the necessity for greater pulmonary ventilation than under normal conditions and a pulmonary bellows of reduced efficiency.

It has been shown that there is a varying degree of anoxemia almost from the beginning in pneumonia and that the relief of this condition comes directly when oxygen is administered. The skin loses its dark color, the respirations and heat become less rapid and labored. This results because of the increased amount of oxygen dissolved in the plasma.

In cases where only a small amount of blood is passed through the lungs, owing to circulatory disorders, this small supplementary supply of oxygen is important. Again when the aerating surfaces of the lungs are covered with exudate through which oxygen penetrates with difficulty to the absorbing membrane, an increased partial pressure of oxygen in the alveoli accelerates the rate of passage. Stadie believes that this impairment of the respiratory surfaces of the lungs is the principal cause of anoxemia in pneumonia, that rapid shallow breathing is less important.

Further, it must be remembered that the air actually inspired does not pass directly into the aveoli but diffuses from wider passages into narrower ones and then reaches the absorbing surfaces. Pure oxygen diffuses more rapidly and in larger quantities when it is not mixed with nitrogen, for this reason the concentration must be considerably higher than the 20 per cent to 21 per cent in air. Numerous studies have shown that there is no danger of giving too high a concentration of oxygen by clinical methods.

The importance of early administration is evident when we realize the effect of oxygen deficiency on the nerve centers and tissues develops insiduously and that once started the damage leads to a progressive determination of the vital functions of the body. The respiratory center is one of the first to suffer. The result is rapid and shallow breathing. Such breathing does not properly ventilate the alveoli so that a vicious circle is established. The defensive agencies of the body against toxins and bac-

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teria are also depressed by the anoxemia so that resistance to further progress of the disease is lessened.

For the same reasons the administration should be maintained until all signs of deficient oxidation are removed. Barach and Woodwell have proved the presence of anoxemia by careful laboratory and blood tests. The best clinical index is the color of the face. So long as there is anoxemia, this is of a characteristic pale ashen hue, different from that of ordinary capillary congestion.

MacLeod says there is no therapeutic measure that is less efficiently put into practice than the administration of oxygen and as a consequence most physicians have little faith in its value. An insufficient amount of gas is given or it is given too late.

One of the most apparent reasons why oxygen is not used more often and effectively is because no satisfactory method of administration has been developed for clinical use. The usual method of placing a funnel in front of the patient's face is of no value because the gas is not inhaled in sufficient amount or concentration. Masks are too disturbing to our patient. Respiratory cabinets have been successfully used in hospitals. It is possible that the nasal tube or bent anesthetic tube placed in the mouth are of some value, but they also are frequently disturbing and difficult to manage.

Barach and Woodwell at the Massachusetts General Boston, and more recently Roth at Battle Creek Sanitarium, have devised outfits that overcome many of the difficulties. These outfits can be purchased.

From my review of oxygen therapy, I believe the benefits to be derived from its use will overcome the difficulties of administration. Stadie says that it is assumed that anevemia in pneumonia is dangerous and that its relief might prolong life until the forces of immunity have asserted themselves. Means and Barach say that if the respiratory load could be lightened or relieved the mortality could be reduced to a low rate.

Barach and Woodwell considered it a life saver in severe pulmonary edema complicity pneumonia.

Rebadeau and Dumas, from a study of oxygen given to infants with pneumonia, say that it does not check the progress of the disease, but in cases with edema it may tide the patient over the critical period and because of the apparent relief it gave their patients, the mothers clamored for its use.

Experimental work tends to indicate that the importance of the heart in acute infectious diseases diseases has been over-estimated and that the real causes of death lie without the heart. Nevertheless, in our routine care of pneumonia the condition of the heart calls for most of our attention. Very early in this disease there is heart strain, due to high temperature and toxic effects. This is soon followed by obstruction in the pulmonary circulation which leads to dilation of the right heart. On the ability of the heart to resist this mechanical strain and the toxic effects of the disease, rests the outcome, in most instances.

In pneumonia various drugs are used to support the heart and relieve the strain. Digitalis is the drug generally accepted for this purpose.

Regarding the use of digitalis, it is important to consider when it should be given, the form most desirable, the dosage and manner of administration. It is advocated by many not to give digitalis until the signs of insufficiency appear. Brooks and Carroll and others advise its use as soon as the diagnosis is made on the ground that signs and symptoms may not appear up to the moment of failure, because of the reserve force the heart possesses, nevertheless heart strain is present from the beginning.

Giving small doses at the outset of this strain should be an advantage. This may not be necessary in the greater number of cases, but analogous to the relief of the strain produced by anoxemia, it seems reasonable to believe that supporting the circulation before it has failed should be an advantage on the ground that it is easier to sustain the heart than restore it. Other reasons for this view are that digitalis acts more efficiently upon normal heart muscle and because the clinical studies of R. L. Levy have demonstrated that the mildly digitalized heart does not dilate as readily as the undigitalized control.

It is my habit to give a fresh standardized tincture by mouth as soon as the patient shows any signs such as weak, irregular, rapid pulse or even general weakness. If the condition is not severe and there are no other complications, the simple dosage of ½ to 1 minim at one year of age, 1 to 2 minims from two to three years, 2 to 3 minims from three to five years, three times daily is prescribed. If the condition is more urgent when first seen, twice this amount is given every two hours until the pulse becomes full, the muscle sounds and apex strong. If the heart appears compitent, the dose is then reduced to three times daily.

Formerly there was much uncertainty about our digitalis preparations, but at present there are a number of standardized products either in the form of tinctures or

tablets of the powdered leaves which are standardized to represent in potency a certain amount of tincture. Neither the infusing nor the fluid extract should be used because the dosage is uncertain.

We should remember that the tinctures deteriorate rapidly in watery solution. Not infrequently I have seen pneumonia patients receiving digitalis in a watery mixture with other drugs. It is best to order undiluted tincture with direction to give the dose in a small amount of water.

By administering small doses of digitalis early in the disease, the patient is partially digitalized so that if the need arises, sufficiently rapid effect can be obtained by continuing mouth administration in more frequent and larger doses. With this simple method, I cannot remember a single case of pneumonia that I cared for from the beginning, in which quick digitalis action became necessary, and for this reason I have preferred to control the dosage by digitalis effect rather than fixed rules for maximum massive dose.

Very rarely in pneumonia, a child becomes weak, dyspnoeic and cyanotic, the jugular veins are engorged and the second pulmonic sound is faint, indicating acute dilation of the right heart. Under these circumstances, conditions are urgent and quick digitalis action is required.

Recent studies show that one maximum dose by mouth may produce its effect in two hours, and therefore, intravenous administration should not be resorted to except when quicker action seems necessary. Under such circumstances it is advised to use ouabain in hard glass ampules intramuscularly or crystaline gratis strophanthin hypodermic tablets to be dissolved in sterile physiological salt solution and injected intravenously or intramuscularly.

It is important to know how much digitalis has already been taken and have a more accurate dosage.

Eggleston's method of dosage is the one usually preferred but the simple rule of Pardee of 2 minims of tincture per pound of body weight, of which never more than one-half this amount should be given at a single massive dose, approximates the Eggleston method and is much easier to remember. Small children require relatively larger doses than adults.

The indications of adequate digitalization consist in nausea and vomiting. With little children it is best to stop before this point is reached.

It is not my desire to imply that digitalis should be used in every case of broncho or lobar pneumonia, but in many complicated cases and with deligate or malnutrition infants, I believe that early administration will aid in relieving the strain and the outcome will be more favorable.

Besides digitalis, there are a number of other drugs which are employed as heart and respiratory stimulants in pneumonia. Most of them are direct stimulants of the central nervous system, and as a result of the restlessness and excitement they produce, may be absolutely harmful.

Adrenalin chlorid is an exception in this regard. When there is a small thready pulse, indicating collapse with fall in blood pressure, I have found adrenalin very useful. It may be given subcutaneously, but probably is best given intravenously in physiological salt or glucose solution. It should be given slowly and only in emergencies as over-dosage may cause pulmonary edema.

During my hospital days, strychnia was the drug most frequently used as an emergency stimulant. It acts on the central nervous system and so stimulates the respiratory center, consequently may increase coughing. On this account, and because of the nervous irritability and excitement it induces, there are other drugs of this type to be preferred. I cannot now remember a case of pneumonia in which I prescribed strychnia.

Camphor in oil, I have used very often as an emergency stimulant. Marvin and Soper from clinical study, conclude that camphor has no demonstrable action on the circulation in congestive heart failure. Cushing states that camphor is of no value even in the largest doses.

Caffein Sodio-benzoate I have frequently used for its temporary stimulating effect. I prefer it to strychnia or camphor in severely depressed toxic patients, but when there is excitement or restlessness, I do not use it.

Atropine sulphate is of considerable use in pneumonia. It is the best respiratory stimulant in collapse and also of benefit when there is a large amount of secretion in the lungs. Flushing of the face is an indication for suspending this remedy or decreasing the dose. I have never had occasion to use it to counteract the effects of over-dosage with digitalis.

Morphine and codein are not stimulants but sedatives. By many the administration is not considered safe for little children, but in the early stages of pneumonia where there is a distressing dry cough or when pain is not relieved by other methods, I have found morphine or codein decidedly useful. They decrease the restlessness and emotional irritability, promote sleep and relieve distress and pain, and in this way relieve the respir-

atory and cardiac strain. I have never seen any but favorable effects when used early. Later in the course of the disease when there is any danger of pulmonary edema, morphine is contra-indicated.

General measures, such as rest, efficient nursing, proper diet, water, bowel control are most important in the care of our pneumonia patients. These methods and the treatment of various symptoms and complications have not been discussed because of a desire to emphasize the importance of oxygen therapy and support of the heart and circulation by medicinal measures as aids in tiding our patients through the critical period until the disease has run its course. It is my belief that if oxygen therapy and medicinal heart support is effectively carried out in conjunction with the general measures, that the mortality could be reduced to a low rate in this serious disease.

DISCUSSION

Chairman Larned: There ought to be a very generous discussion on this subject. It is a thing of interest to all of us. Dr. Roth is here with us, I am very glad to say, and he has his oxygen apparatus here. I will ask him to demonstrate that as the beginning of the discussion, and then questions can be asked relative to it.

Dr. Roth: I am indebted to Dr. Rowland for the privilege of showing this apparatus over here (indicating). I enjoyed his paper very much. It certainly covers the subject very fully. He has discussed the therapeutic measures covering the most important conditions that are met with. In pneumonia and other conditions where anoxemia is present we must understand that there are two dangerous things that have to be fought and dealt with in the beginning, that is, not only the anoxemia, but the acidosis. They most always are co-incident, and sometimes the symptoms of one lead to the cause of the other condition. The rapid breathing is not due to the anoxemia generally. It may be temporarily, but not regularly. If, in spite of oxygen therapy the breathing is not relieved, don't think that it is because the treatment is not having its effect, but it is due to the co-incident acidosis, which must be adequately relieved by some other means. You must remember that you cannot always go by the symptoms of respiration to be assured as to whether the treatment is having any effect or not.

Again, I want to emphasize the fact that the treatment to relieve anoxemia should be begun early, because the effects which are obtained resulting from the anoxemia are not easily relieved; they persist even long after the treatment has done all that it can do. There are deep seated injuries in the central nervous system and in the musculature of the heart, and it takes time for those things to be remedied, if they can at all be remedied. Some cases are treated so late that any amount of oxygen and most careful treatment will avail nothing at all, and the patient is doomed to die. Therefore, it is difficult to tell early or soon as to what really is the advantage of oxygen therapy, although I believe that there are statistics that will help us to determine that particular point, in the indication that the mortality has been lowered. When the treatment is begun early they say, "Well, the patient would have gotten well, anyway."

The administration of oxygen is nothing new, and I am not going to cover the whole subject in the time that is allowed. Therefore, I am going to limit myself to this type of apparatus that I have here (indicating). The object is to do away with the chambers where the patient and the nurse have to live in, or where the patient and the nurse have to live in a room which is supplied with the proper amount of oxygen that entails a lot of mechanical fixtures and quite an expensive outfit. We have also tried to eliminate this expense by the use of a tent which has been suggested, and we also do not use a covering for the entire patient. With children that is not so important, but with the grown individual it makes quite a difference. Any apparatus or contrivance which encloses the entire patient, of course, makes it more difficult for the patient to be taken care of, and in that respect from the experience we have had with this apparatus I am sure that confining the head of a patient only is far to be preferred. It obviates the necessity also of putting a mask on the patient or using the various contrivances about the nose for the administration of oxygen.

Let's remember that when oxygen is needed, give oxygen, no matter whether you have an apparatus or not. It is better to give it imperfectly than not at all. You may have to waste it, but it is better to save a life by wasting oxygen than to not use it at all. There is one advantage in an apparatus of this kind in that it makes the administration of oxygen not very costly. A tank of oxygen will last quite a while, and in continuous operation it will last from 12 to 24 hours. With children it will last longer than that.

Right here let me call your attention to the suggestion that has been made before this meeting as to whether this apparatus could be applied to more than one child at a time. There is no reason why that should not be. The apparatus or motor and pump which is used to circulate the air through the apparatus is ample to supply the needs, not only of a grown man, but of probably two, and it could be increased by increasing the speed of the motor.

Now, to come to the apparatus again, you see it consists of a tank—of course, you understand this was particularly designed for an adult, but you can adapt this to a child. Now, we haven't the child here, but you can very easily see how this could be placed on the bed (indicating). The height of the tent can be regulated, and in this case we will lower it—not as low as we can get it—in this case it is not low enough. This should be hanging a little (indicating), also, so that the head of the child will be about where my fist is. This tube here is perforated, and is for the purpose of taking from the tent the expired air. The air in this way is more or less re-breathed. I mention this because the question sometimes comes up, isn't it better to allow it to accumulate in order to increase the stimulation of the respiration. It is easy to stimulate. When you have pneumonia the thing is to have a sufficient amount of oxygen to breathe, and the respiration is not, under usual conditions, altered at all. When there is no air, and air hunger is the result from lack of oxygen, you can administer that easily, but we cannot take the time to do that now.

The disturbance to respiration is not due to the accumulation of CO_2 in the lungs, because that is easily relieved by increasing the breathing, so that it is immaterial as to whether we withdraw all the air or ventilate it very effectively. The fact of the matter is that the removal of CO_2 would be more beneficial than harmful. The air is withdrawn through this tube (indicating), and then we can trace it to the pump and from the pump it passes through here (indicating), and between the pump

and the tent is a little muffler, which is intended to obviate the noises. Then the air passes into this receptacle here which is filled with lime for the purpose of removing the carbon dioxid, and it will remove all of it, too. In time, of course, it will become insufficient and an amount of the CO_2 will pass off. That can easily be determined by withdrawing the air through this pet cock (indicating). Then it passes into a small bottle like this (indicating), containing a little lime water. If, after passing the air through there for a short time, say, a half a minute, the liquid remains clear, then the lime is sufficient. If it becomes milky it simply means that the lime is going away on account of the fact that the air is being withdrawn from a point beyond. It is not necessary to make this test until it has been used for a certain number of hours. That should be more or less up to the nurse as to how long it has been in function. However, it is good once in a while to make the test to make sure that the lime is not altogether too weak, and insufficient. The air then passes from the bottom of the tank across into this receptacle here, which is a tank containing a double copper coil through which the air passes. This tank is to be filled with ice and water, not merely ice, because if you simply put ice in there the heating of the coil by the air will simply melt the ice next to the coil and there will be an air space between the ice and the coil and the refrigeration will be very ineffective. It must be ice water; keep a liberal supply of ice in the tank and the coil always well covered. The whole thing is properly insulated, so as to make the consumption of ice very slight, and the ice will last 24 hours and sometimes more, depending, of course, on how rapidly it is used and the season of the year.

You might ask, why should we refrigerate the air? Simply because if the patient is under the tent any length of time and rebreathing the air the temperature of the tank will begin to rise, and the patient will be very uncomfortable; he will be too hot and will perspire, and it is for that purpose that we had to come to the refrigeration of the air. In using this in hot summer time on days with a temperature of 90, 92 and 93, under those conditions it is possible to maintain the air in the tank several degrees lower than the temperature of the room.

I am not going to discuss here the value of breathing cold air. You have all heard about that. It has been accepted, and it has been criticised very much, and I am satisfied that the criticism of cold air is chiefly due to the fact that the patient has been exposed generally to the air too much. The breathing of cold air, I believe, is always beneficial, and in this way it will make it possible for the patient to breathe cool air, which is a tonic. There is no question about that. It will increase the comfort of the patient very much, also, and I believe it will relieve the nervousness and other symptoms, in addition to the added consumption of oxygen.

The air then passes through this tube (indicating). Perhaps you can see it better this way. On the way to the tank the air is mingled with the oxygen. The oxygen is obtained from the tank practically with a reducing valve by means of which the flow of the oxygen is controlled. The oxygen is admitted through this flow-meter, a very simple contrivance. You will notice that the water stands up to a certain level. The proper level is indicated by that ring (indicating), in the tube. It should be in contact with the ring. It doesn't matter whether it is down below or above. As long as it is about where it is the level of the water is all right.

This (indicating), has to do with the proper regulation of the flow of oxygen. The tube is perforated; there are a number of perforations also down at the bottom, and you see the oxygen will flow from the bottom also.

Now, the question is, how much will you give? That depends on how serious a case it is you have to deal with. If the anoxemia is severe you will have to increase the oxygen within certain limits. There is no danger of giving too much. It is very difficult to give more than 75 per cent, anyway, and it is only when you prolong the administration of oxygen at 80 per cent or more that in time it may be injurious. There is no danger; you couldn't even do it with this apparatus without flooding the tank and spending or wasting a tank of oxygen in a short length of time. Now, the average amount is between 3 and 4 liters per minute. This is determined by having 3 and 4 holes flowing. With one hole flowing you get 1 liter, two holes, 2 lighters, three holes, 3 liters, four holes, 4 liters, five holes, 5 liters. However, you will not be called upon to give more than 4 or 5 liters per minute, and I should state here that when 3 holes are flowing, the amount or percentage of oxygen in the tent when the tent is properly in place and in front of the patient—it is as hermetically sealed as possible, it is not going to be absolutely sealed—the amount of oxygen in the tent under those conditions, with the average individual, a man, will be 20 per cent with two holes; 30 per cent with three holes; 40 per cent with four holes. This is calibrated. Thirty and forty per cent is the average amount of oxygen which is required in severe cases of anoxemia.

The air is introduced at the top of the tent, and the temperature of the tent can be watched by means of this thermometer here (indicating). I want to call your attention to the drain cock here (indicating), which is for the purpose of draining the tank when necessary, and more important than that is another drain cock down here (indicating). This drain cock is for the purpose of removing the moisture or condensation which, of course, will accumulate. The air should be moist, of course. It is not desirable and we do not want to have perfectly dry air to be rebreathed. That air, of course, passes through the cooler, and some of the moisture will condense, but not very much. That is the reason it has to be drained every little while, say, possibly once in two or three or four or five hours.

That is all that I think will be necessary to discuss. I will be glad to answer any questions that you might wish to ask. I would like to have this thing turned on so you can see how it works. (Starts machine operating). That is not very satisfactory. There is something wrong. Maybe the current here is alternaing current. I have not investigated to see. However, it is practically noiseless in its operation. It is not running as it should.

I thank you for your attention (applause).

Chairman Larned: Dr. Rowland's paper is now open for discussion. Dr. Rowland has covered this ground so very well that I feel there is very little to be added to what he has already said. Is there anything more, Dr. Rowland, that you wanted to add.

Dr. Rowland: Well, I want to express my appreciation to Dr. Roth for bringing this apparatus here. I feel sure it has been of considerable interest to me, and also to many of you. In mentioning the factors in regard to the anoxemia in the beginning he mentioned acidosis. Personally I have never felt that acidosis was much of a factor in pneumonia or anoxemia, and I have never felt that anoxemia was much of a factor in pneumonia, anyway. This may be because we have all been so thoroughly imbued with the method that we think best. I base this opinion pretty much on the theory so beautifully described by Dr. Merriatt in regard to hydremia, and

if hydremia does not develop, acidosis does not develop.

I think that the main factors in pneumonia, as I have already stated, are due to the disturbed ventilation, due to the decreased surfaces in the lungs, and partly to the rapid breathing. The heart, also, is a factor. The disturbance of the circulation is also a direct factor in producing the anoxemia.

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SINUSITIS A REASON FOR APPARENT FAILURE FOLLOWING REMOVAL OF TONSILS AND ADENOIDS IN CHILDREN*

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For many years tonsillectomy and adenoidectomy in children have been considered a sort of cure-all or last resort procedure whenever one was undecided what was best. Most children show general improvement following removal of tonsils and adenoids, and so we can truthfully say that at least some benefit is derived therefrom. Perhaps one of the most common conditions for which the tonsil and adenoid operation is performed is the chronic "head cold" in children. It is in this condition that we hear so many deplore the tonsil and adenoid operation as a failure; the parents complain that the operation was useless and that the child still suffers from head colds. To be sure, there are some children whose general reaction to cold weather predisposes to colds, but in the light of more recent study and investigation we are coming to realize that the reason many are not cured of their head colds, or bronchitis, by tonsillectomy is because of the existence of paranasal sinusitis which was never recognized and probably never suspected.

The general idea that children do not possess nasal sinuses is pardonable when we note that in our texts on anatomy and in college instruction little or no emphasis is placed on their existence. We have been under the impression that sinusitis should not be suspected until a child is ten or twelve years of age, while as a matter of fact, I have observed the condition in infants as young as six months.

According to Abt, the ethmoids and maxillary sinuses appear as early as the third or fourth month. The antrum is a well developed cavity at birth with the floor situated high in the maxilla. The ethmoids show well developed cells at the sixth month of fetal life. The frontal sinuses do not develop quite as early, but in some cases they are rather well defined at one year of age, and in most cases at four years. The sphenoids also are present at the end of the first year.

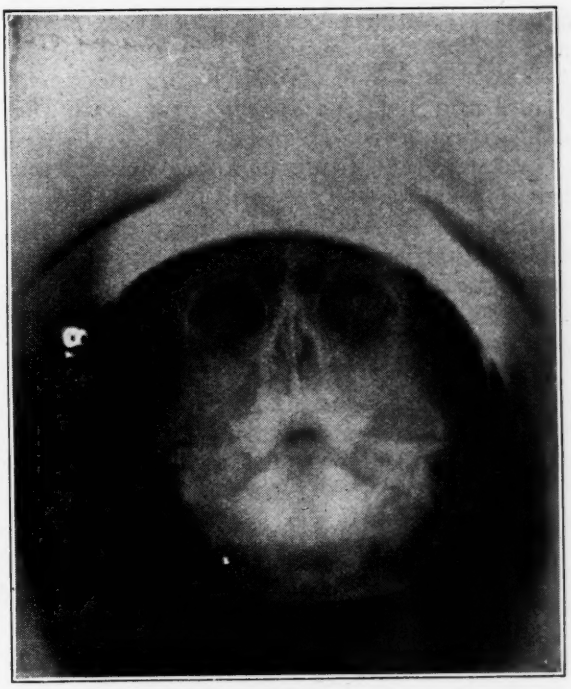

FIG. 1.

Six-year-old boy. Antrums well developed, cloudy on left. Pus found on operation

Now the existence of sinuses has been demonstrated, we have every reason to expect them to become infected. The infection starts as tonsillitis and pharyngitis, or just as pharyngitis and a head cold. The enlarged adenoids interfere with ventilation and drainage of the nasal chamber and the mucous membrane lining the sinuses becomes involved. As the infection in the adenoids and pharynx subsides, the nose becomes more free and the majority of children recover. In a certain percentage of cases, the child does not improve, but presents the symptoms and signs of a chronic head cold.

The acute attack is accompanied by the usual signs and symptoms of any acute in-

*Read before Section on Ophthalmology and Oto-Laryngology, M. S. M. S., Mount Clemens, 1924.

fection; that is, fever, general malaise, and so forth. The acute manifestations, with purulent nasal discharge, have usually subsided in a few days. I doubt, however, that the mucous membrane lining the sinuses ever returns to normal; in other words, I believe that a mild type of infection persists only to flare up subsequently when anything lowers the general resistance of the patient.

The most common manifestation of chronic sinusitis is the mucopurulent discharge from the nose. It may be associated with vestibulitis and even excoriation of the nares. The child is treated as if he had a head cold and is given all forms of expectorants and sedative cough cures, with the usual disappointing results.

It may be seen from the above description that a tonsillectomy would not drain the antrum nor do away with the symptoms resulting from infection, and naturally tonsillectomy and adenoidectomy would fall into ill repute as far as this type of case is concerned.

The patient may also develop signs of focal infection, such as chorea, arthritis, and iritis. In subsequent life the beginning of a condition resulting in nasal polyps, asthma, and possibly hay-fever may be attributed to sinus infection in early life.

A few children who have come under my care were brought in because of slight rise in temperature and an unexplained irritable disposition. When these children became afebrile their dispositions changed and they were transformed from peevish, whining, to happy children. I have no doubt that many restless, fretful children are punished and disciplined when their irritability is actually due to a low grade sinus infection.

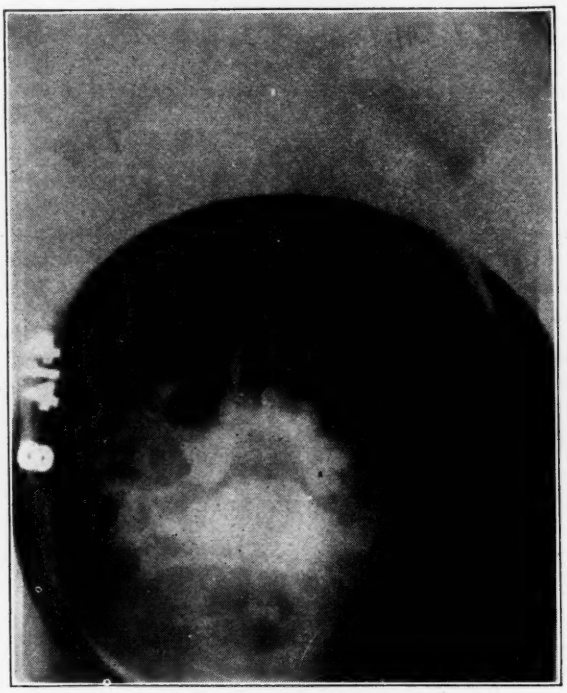

FIG. 3.
Six-year-old girl. Sinuses well developed

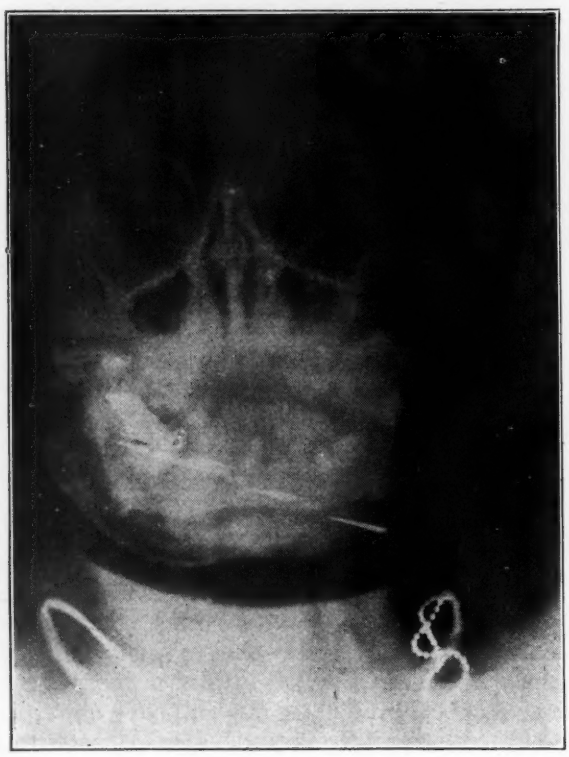

FIG. 2.
Five-year-old girl. Antrums, ethmoids and frontals well developed

The diagnosis is not difficult and may readily be reached by the history, the discharge of pus or excessive mucus from the nose, vestibulitis, cough, and, last, but not least, by the X-ray. The X-ray is indispensable in these cases. A stereoscopic plate is advisable, but if it cannot be obtained, anteroposterior and profile plates should be taken. In some cases a flat plate will be misleading, as unerupted teeth may produce relative differences of density.

The treatment of acute cases of sinusitis is simple. Steam inhalations with tincture of benzoin compound and the instillation of 10 per cent argyrol or 1 per cent mercurochrome shrink the mucous membrane and allow for escape of the pent up pus. In my experience, chronic sinusitis does not yield to such measures. The removal of tonsils and adenoids allows for some ventilation and should be done to eliminate these parts as irritative factors. The sinus itself must be drained.

Under general, gas, or ether anesthesia at the time the tonsil and adenoid operation is performed, or under anesthesia for the sinus alone, the antrum is punctured under the inferior turbinate. It is to be remembered

that the floor of the antrum is situated high in the maxilla, and care must be taken to avoid injury to the dental buds. In many cases the opening with a punch is all that is necessary. In a week or ten days the nose becomes dry and the symptoms disappear. In a few cases, it may be necessary to follow this treatment by irrigation with normal saline solution.

I have been criticised for inflating the antrum gently while the patient was anesthetized, but as yet I have seen no untoward results. Bear in mind that my inflation is gentle and the cannula used has a smaller neck than the head of the trochar, consequently there is no pressure. Dean passes a cannula into the sinus and then, by inserting a long luer syringe needle through the cannula, aspirates pus. This procedure is followed by instillation of argyrol solution.

In a few cases the ethmoids may also have to be opened, but this procedure should be reserved for cases in which the X-ray shows involvement of those sinuses.

REPORT OF CASES

Case 1. A girl five years old was brought to the Jackson Clinic with a complaint of frequent head colds, cough, and excessive amount of mucus in nose. She had had the usual exanthems and the mother stated that since the age of two and one-half years she had been the victim of repeated head colds. From the time inclement weather was established in the fall until well along in the spring the girl was either just recovering from, or developing a head cold. The tonsils and adenoids had been removed at the age of four with no change in the symptoms. In the past, there had been bronchitis enough to alarm the parents, who, of course, assume that "all persistent coughs of this type might lead to consumption." Also in the past year the child had used from one to three handkerchiefs daily and could at almost any time blow large quantities of mucus from the nasal chambers. At irregular intervals irritation, redness of the nose and some herpes would develop. This had been diagnosed as eczema, the cough was diagnosed as bronchitis and the nasal discharge was tabulated as catarrh. The three conditions thus diagnosed were treated symptomatically. No one had suggested and I doubt that anyone even suspected the possible existence of sinus infection. The X-ray showed both antrums cloudy.

A window was made in the antrum under the inferior turbinate, as described above, and within one week the patient had improved. There was almost no nasal discharge and the cough had become periodic instead of constant. Two months later the mother reported that the child had been perfectly well except for one head cold following exposure to severe rain with subsequent chilling.

Case 2. A boy, six years old, was brought to the Clinic because of nasal discharge following an attack of measles at the age of three years. The tonsils and adenoids had been removed at the age of four with no benefit. The patient continued to have the so-called catarrh and considerable cough. The parents were very much disgusted with the tonsil and adenoid operation and were not at all kindly disposed to the medical profession.

After an X-ray plate revealed definite sinus infection, the left antrum was opened, and within two weeks the child had greatly improved.

Case 3. A child, nineteen months old, was brought to me because of excessive mucous discharge from the nose and excoriation about the vestibule. The X-ray plate showed cloudy, but well defined antrums which were opened; there was subsequent symptomatic improvement on the part of the child.

CONCLUSIONS

The tonsil and adenoid operation is not the only method of procedure in the so-called chronic cold in children. There are well developed sinuses in children which are prone to be infected. Every case of a persistent cold, or so-called catarrh, in children warrants investigation from the point of view of sinusitis. Medical measures are of little value in sinusitis. Surgical drainage is the most rational procedure.

DISCUSSION

Dr. J. S. Wendel, Detroit: As Dr. Barlow gives his findings we are apt to get the idea that this is rather easy and that we all ought to be able to do it the first time satisfactorily; but I think those of us who have tried it will recall that it is not as easy as it seems. That is, the getting of X-ray plates such as Dr. Barlow has shown is not an easy matter. The subjects are young children who are always more or less troublesome when they are brought around an X-ray machine, especially if they have ever had anything done to them surgically. So I think Dr. Barlow and the other pioneers in this work—Dean of Iowa City and Arbuckle of St. Louis—are to be congratulated upon their perseverance in this work, in spite of the fact that members of our specialty and also pediatricians have at times pooh-poohed the idea of this being a very important subject. That, however, is something that pioneers in any line of work are compelled to meet. If we have had the impression that sinuses did not exist in young children anatomically, I think that this idea has been dispelled by the plates that Dr. Barlow has shown here this morning. The presence of the sinuses being admitted, the conclusion that Dr. Barlow arrives at that these sinuses sooner or later become infected, is very good.

There is the question of the way these cases should be treated. So far, I think the usual method of treatment has been local, not surgical interference. Dr. Barlow has said this is all right in acute cases. We, perhaps, have been a little loathe to take up the surgical treatment of sinuses in children because of the results that have been reported—the spreading of the infection from the sinuses to the orbit, to the nasal pharynx, and to the ear, and I think we are all relieved somewhat to have Dr. Barlow tell us that these dangers have perhaps been a little exaggerated, and that if the work is done carefully, the patient having been examined by the X-ray previously to get a correct idea of the size and position of the sinuses, and if we realize that we are dealing with rather tender structures, that the sinuses of children can be attacked vigorously enough surgically to get a good result. I think we must bear in mind, however, that there is a certain danger in attacking the sinus of children surgically, and that if it is done indiscriminately without proper examination, we are liable to get a set-back in some of our first

attempts. Dr. Barlow has said it does not need a radical operation, and I think that is a good point. It is a question of getting drainage.

I certainly would not attempt to criticize the paper, having done very little compared with the work of Dr. Barlow, but it seems that so far we cannot arrive at definite conclusions. I have had the opportunity to follow some of these cases for a time and I have found that at least some of the cases that we have considered chronic, that is, where acute symptoms seem to have subsided, have responded to this treatment: that is, shrinking the nasal mucous membrane and giving the sinuses an opportunity to open and drain. The symptoms would subside for a time, but I have noticed that the following year some patients would come back with an acute flare-up. The question comes to me whether, if these patients were treated surgically, we could assure the parents that the child would not have to come back next winter with another attack. We have to weigh the relative benefits obtained by treatment, and those obtained surgically. Surgically would really seem to be the more logical, as it provides an avenue for pus to escape. I think all of us, as we have listened to Dr. Barlow, can think of a half dozen or more cases in our practice that could be put in this category of chronic sinus condition in children, and it is up to us to try to do something to corroborate the work that Dr. Barlow and others have done or to disprove it.

It seems to me another point to emphasize is to make as complete a diagnosis as possible before you make exaggerated statements and promises to your patient, and before you begin treatment. The patient then will not be dissatisfied with the operation and will think a great deal more of the medical profession. In doing this work it seems to me we should co-operate with the pediatricians, as they see these cases first. Then we ear, nose and throat men should keep our eyes open and take care of these patients properly when they are sent to us.

Dr. Louis W. Toles, Lansing: This perhaps opens a new field, and yet an old one. It simply proves the contention that an infection in children is no different from an infection in the adult, and that whether it be a subperitoneal abscess or an abscess of the antrum, the general principle of drainage applies. This simply is a paper along the lines of treating this condition the same as in the adult, and the principle is absolutely correct.

Dr. Howard W. Peirce, Detroit: I think, first of all, that we have been misled by our anatomists in not expecting to find such wide development of the sinuses in young children as we do find. Another reason is that we so often do a tonsil and adenoid operation on children at the suggestion of the family physician and pediatrician without a complete examination of the child before operation.

Two or three points brought out by the doctor would help us in our diagnosis if we would look at these children beforehand. A purulent discharge from the nose, crusts and exfoliation, usually do not come from adenoid tissue. Nor does a bilateral pharyngitis with a purulent discharge usually come from adenoid tissue, although it may. I think we should take great care in looking over these children as we look over adults before tonsillectomy. They should have complete nose examination, including as much of an examination of the sinuses as possible.

I think here, in spite of the talk to the contrary, that our transillumination does do some good. The child will submit to transillumination readily, and it gives us an idea whether that child should have an X-ray. You can transillumine practically every child. In private practice you cannot X-ray every child that comes to you for tonsillectomy.

As to the treatment, I think it depends a little upon whether we discover that the child has a sinus condition before tonsillectomy or after. If we discover that the child has maxillary sinus infection before tonsillectomy, then we should do, with the tonsillectomy, a puncture for drainage, and my limited experience has shown that it is better to make a small punch opening into the antrum rather than to irrigate it afterwards. If, however, we or someone else has done a tonsellectomy previous to the discovery of the sinus condition, a great many of these children, I think, can be cured by the treatment method, or at least relieved of their symptoms. Then inhalation or instillation will, if the case is not a bad one, clear it up.

Dr. H. Lee Simpson, Detroit: I do not think a more important thing comes within our field at the present time than this one that Dr. Barlow has brought up, because in this lake belt we are so frequently called upon to deal with it.

From an anatomical standpoint I have been much impressed by the work of Shaffer of Philadelphia, whose records show that he has never found a specimen in which the ethmoid cells were not relatively well developed at birth. He has found almost any other sinus absent, or showing simply a vestige of their presence, but the ethmoid labyrinth is the one that is always present and to be dealt with. Granting in those cases that come to us, whether we have discovered it by direct examination or by X-ray of by a combination of all, that the discharge persists, I thing most of us in the last few years, certainly since the work of Dean in Iowa City, have been inclined to tell the parents of these children that we are operating for removal of tonsils and adenoids because of persistent discharge, that the operation depends upon what is found in the nose, and that there is a liability that 20 to 25 per cent of these children will not be cured. That seems to be true. I do not think that is true as we do it in Detroit, but I think it is practically true in the whole lake region. It is a different proposition in this region from any other part of the country not affected by climatic conditions, but yet from the point of view that we are peculiarly located, we have a greater responsibility in the handling of these patients, and in that line we have had a rather interesting experience. It is not much of anything, but I have confidence that it does contribute to the care of these patients.

We all know that in the present day we are super-heating our houses, our school-rooms, our public offices, private offices, churches, etc. In the matter of moisture content in the various places where children have to be, we must recognize that they are living in too dry an atmosphere. I have demonstrated this in some homes where I have been able to get the intelligent co-operation of the parents (in most cases the fathers were engineers and knew something about these matters) to see that more moisture is provided in the house. If the windows are frost-covered in the winter time the modern American housewife thinks it is a sign of bad housekeeping, but I have found in those homes where they keep the temperature not too high, not above 70, and 68 is better, that when the family becomes accustomed to it they go through the winter in much better shape in this climate than they ever have done before.

As to the Holmes pharyngoscope, I have never been able to make any use of it. The edge of the Eustachian tube looks out of proportion.

Dr. Paul R. Urmston, Bay City: There is one question I would like to ask. In a chronic antrum that does not clear up after ventilation and drainage, where it seems that saline irrigation is indicated, I would like to ask Dr. Barlow his experience—whether that is a matter that would require a general anaesthetic, or if he is usually able to handle the patient by other means?

Dr. B. N. Colver, Battle Creek: The point Dr. Simpson mentioned about the air in our houses in winter time I am sure is true. I do not know of anything more irritating than inside air and more likely to cause colds.

We have heard a discussion of the treatment, surgical or local, but the point I wish to mention is the general treatment of the child. When Dr. McCollum was at our place last winter he talked about the animals that had been carried on a too-low vitamin B diet, and he said that at postmortem every one of these rats showed an upper respiratory pathology. Later, Dr. Stucky of Lexington told about the clinical studies they have made in the mountain-locked counties of Kentucky, where, for economic reasons, the people sell their dairy products and eggs to get enough money for tobacco and calico, living largely on a farinaceous and sugar diet. He has found a tremendous amount of upper respiratory trouble in children that was rapidly relieved by taking them into a hospital or clinic where they are given eggs and milk and cream.

In this connection, Dr. McCollum urges the use of codliver oil, not the so-called emulsions, which really contain about one-tenth of the vitamin content of the pure oil. Dean in his work with children has observed the same thing, and his great plea is to get them into the hospital, not for surgical or local treatment, but so that the diet of the growing child may be taken into consideration.

One question I would like to ask. I would like Dr. Barlow to discuss a little more the cases where the trouble is in the ethmoid.

Dr. Carl G. Wencke, Battle Creek: One very simple thing which has helped me in the handling of children with upper respiratory trouble is the question of wetting the hair before combing it. Very frequently when a boy is sent by his mother to clean up for dinner he wets his hair, grabs a comb and slicks it this way and that, and the result is that his head is kept damp, which aggravates any trouble there may be in the upper respiratory tract. I have frequently found that where other treatments have failed, just the question of having these children comb their hair dry has done away with a great deal of the condition of nose and throat.

Dr. George L. Renaud, Detroit: I wish to mention the warning of patients that the taking out of adenoids and tonsils will not cure their trouble. I believe we ought to go farther than that. If the man who does the tonsil operation knows how to operate, there would be much less trouble with the sinuses. I realize I am out of order, speaking to you men, but it is a question that appeals tremendously to me.

Dr. Roy A. Barlow (closing): Simple surgery and drainage seems to work better in children than in adults. Whether their recuperative powers are better and they come back more rapidly, I do not know, but certainly they do improve under simple drainage quite satisfactorily and in most cases that is sufficient.

Answering the question in regard to repeated punctures, as I stated, frequently it is necessary to give the second or third anaesthetic and puncture. I do not hesitate to do it. Some men claim they can follow the treatment by inflating without an anesthetic, but I may say frankly that my hypnotic powers are not sufficient to control a small child while inflating its nose without an anesthetic.

Dr. Wendel's point in regard to subsequent head colds—yes, they probably will have head colds for a year, but perhaps they will not be as hard to treat. But our work is relatively recent and I cannot give you a first-hand statement on that point. I have a feeling that the sinus is always susceptible to a flare-up, that the sinus membrane remains more or less prone to infection as a result of cold or anything that tends to lower the patient's resistance. But even so, it does not contraindicate drainage to clear up the symptoms.

In answer to the question about opening the natural opening and letting it drain, the natural opening is open; these sinuses are draining; that is what the patient comes complaining of; but the natural opening is not large enough and it is not properly situated to take care of the excess amount of mucus, and your artificial opening simply facilitates that and gives Nature a chance to overcome the infection.

As to the lacrimal duct, I do not know whether I hit it or not, and I do not care. Shaffer has demonstrated that the duct in some cases is closed, in some cases open. It is well forward and surrounded by a firm tissue, and the opening of the sinus is well behind that. Our experience—which is verified by that of Dean and Mosher—is that we have never seen a case of epiphora following such procedure.

Concerning ethmoid infection, I have a feeling that the ethmoids probably start the picture. In most cases my personal belief is that the antrum is acting as a reservoir and giving the patient irritating symptoms rather than acting as an active center of infection. When you drain, that is all that is needed.

The question of heating our homes, I think, is quite apropos; but regardless of how scientific it may be to live in a room at 68, I do not like it.

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PUBLIC HEALTH ACTIVITIES

Edited By

MICHIGAN DEPARTMENT OF HEALTH

SCARLET FEVER CONTROL

THE CARRIER STATE

Probably the most dogmatic public health procedure is the control of scarlet fever. The rules of quarantine vary in different states and in different communities to such an extent that it is quite obvious that there has been no unanimity of opinion as to the sources and modes of infection. Quarantine period varies from three weeks to fifty days and is based entirely upon the epidemiological experience of the individual writing the regulations. In any public health meeting, the proponents of modified quarantine are certain of a "hot" rejoinder from a group of health officers who hold for a long time period of quarantine for scarlet fever.

During the last year there has crystallized out of the many researches on the etiology of scarlet fever some very definite conclusions. The first of these researches to be published was that of the Doctors George and Gladys Dick in October, 1923, when the announcement was made that scarlet fever had been produced experimentally by means of a streptococcus scarlatina, one of the hemolytic streptococci. This was followed by a series of papers, the first of which appeared January 26, 1924, which quite conclusively demonstrated that there was a specific hemolytic streptococcus for scarlet fever. This was also confirmed by Branch and Edwards in 1924, and by Zingher in 1924. Dochez and Sherman produced antiscarlatinal serum for scarlet fever in 1924, and the Doctors Dick also produced antiserum in 1924, and the work of F. A. Blake in 1924 added confirmatory evidence.

These announcements of the various research workers have opened up a field for the health officers in the control of scarlet fever of untold importance.

For many years it has been recognized that some convalescent scarlet fever cases become carriers, but there was no way of demonstrating this fact except by statistics kept upon the number of cases which developed due to contact with scarlet fever recoveries. It has been recognized that convalescent scarlet fever cases, which had draining ears or suppurating glands or sinus involvements, caused a greater number of contact secondary cases than did convalescents that showed no open lesions; still convalescents that showed no open lesions were constantly spreading scarlet fever even though they had been kept in quarantine twenty-eight to forty days.

It has been shown repeatedly that hemolytic streptococci were associated with scarlet fever cases. This fact has been used in the control of quarantine in Pontiac by Dr. Neafie, for about two years, with a marked reduction in secondary contact cases. The Michigan Department of Health has, in institutions, separated out the streptococcus carriers with some success. Since the advent of the work of the Doctors Dick, the procedure can now be made quite specific. For if it can be shown that these streptococci, which the scarlet fever convalescent is carrying either in a draining ear or in his throat which is apparently free from pathology, are the streptococci that produce the specific toxin, we have a definite, scientific reason for holding the case in quarantine for a longer period.

With this fundamental fact in mind, work was started by the department to confirm these various researches and to demonstrate their practicability in the hands of the health officer. Throat cultures from convalescent scarlet fever cases in quarantine twenty-eight days, and cultures from ears of convalescent scarlet fever cases which have been in quarantine longer than twenty-eight days have returned streptococci which produced the specific scarlet fever toxin. The toxin has been tested out on individuals who had shown positive Dick tests. The criterion of judgment was based upon the following procedure:

A group of individuals shown susceptible to scarlet fever by the Dick test were retested with Dick toxin and control. Simultaneously they were tested with the unknown toxin and the unknown toxin mixed with convalescent scarlet fever serum. A series of tests on individuals recently recovered from scarlet fever was run parallel. The results proved conclusively that the organism, which had been isolated from the throats and ears of convalescent scarlet fever cases at the end of the quarantine period, produced the same toxin as that produced by the organism of the Doctors Dick,

demonstrating the fundamental starting point of our future investigations, namely, that the carrier state in scarlet fever can be revealed.—C. C. Y.

HEMOLYTIC STREPTOCOCCI AND TONSILLAR INFECTION

This report is based upon a study of 115 inmates of the State Industrial School for Boys. Tonsillectomies were performed on all of these boys. The cases include only boys known to have been at the school for at least twelve months prior to operation—boys who lived under the same environmental conditions for a uniform, and a reasonably long period. In evaluating the study it must be remembered that sanitary conditions at this institution were deplorably bad until shortly before the date of these operations, and that an epidemic of scarlet fever which totalled over 100 cases occurred the year before. The school afforded the most favorable conditions for the spread of communicable diseases, and for the development of a great many disease carriers.

TECHNIQUE OF STUDY

Throat cultures were taken from each case immediately before operation. The excised tonsils were placed in sterile containers and taken to the laboratory. Each tonsil was inspected and classified according to its gross pathology as one, two, three or four plus, the last mentioned classification including those tonsils which were greatly hypertrophied, or showed pus exuding from the crypts. The surface of each tonsil was seared, and the gland divided in half by a single incision. Swabs were taken from the depths of each incised tonsil and were cultured upon blood agar plates.

The hospital records of each boy were searched and each hospital diagnosis which might bear any possible relationship to tonsillar infection was tabulated. No records of dispensary treatment were available.

RESULTS

The hemolytic streptococcus findings from the throat cultures immediately preceding operation together with the findings from the excised tonsils are shown in the following table:

	Positive for Hemolytic Streptococci		Negative for Hemolytic Streptococci		Total Cases
	No.	%	No.	%	
Pre-operative Throat Cultures	18	15.7	97	84.3	115
Excised tonsils	59	51.3	56	48.7	115

Although the percentage of positives found by different individuals varies considerably, these results agree with those of other workers. Davis[1] found 43 per cent of pre-operative throat cultures positive for hemolytic streptococci, and 97 per cent of tonsillar crypts. Pilot and Davis[2] in a similar study, found 61 per cent of the surfaces of excised tonsils positive and 97 per cent of the crypts. Tongs[3] found 60 per cent of pre-operative cultures positive and 83 per cent of crypts. Nakamura[4] found that 52 per cent of excised tonsils contained hemolytic streptococci.

All of these studies, together with our own, seem to establish the fact that the interiors of tonsils commonly harbor hemolytic streptococci, and that the absence of these organisms from the surface of the throat by no means indicate that they are not present in the tonsils.

The clinical histories of the 115 cases are summarized below. In the miscellaneous classification are placed the occasional cases of rheumatism, bronchitis, and other similar acute infections.

The hospital records gave no significant differences between the two groups. The boys whose tonsils showed no hemolytic streptococci were admitted just as frequently as those whose tonsils did not.

These findings again confirm the results of the majority of other investigators. Caylor and Dick[5] made a quantitative study of bacteria in tonsils and asserted that "there is no relationship between the types of bacteria, and the clinical condition of the patients or the pathologic condition of the tonsil." Davis[1] concluded that nearly everyone has hemolytic streptococci in his tonsils which may or may not cause arthritis, iritis and other focal infections. Bloomfield and Felty[7] believe that in attacks of acute ton-

Hemolytic Streptococcus Findings in Tonsils	Total	No History of Illness		History of Illness		Tonsilitis		More than One attack Tonsilitis		Scarlet Fever		Diphtheria		Fever Unknown Origin		Sore Throat		Miscellaneous	
		No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
Positive	59	15	25.4	44	74.6	22	37.3	5	8.5	10	16.9	11	18.6	15	25.4	8	13.5	5	8.5
Negative	56	15	26.8	41	73.2	18	32.1	5	8.9	9	16.1	6	10.7	7	12.5	13	23.10	10	17.8

sillitis the hemolytic streptococci are not of autogenous origin.

DISCUSSION AND SUMMARY

Hemolytic streptococci are decidedly more prevalent inside the tonsils than they are on the surface of the throat. Such a result only gives additional weight to lack of value of negative laboratory findings. A hemolytic streptococcus carrier may give a long series of negative throat cultures, but during all of this time, he may be carrying the organisms in his tonsils. The streptococci may be released at any moment and may be the cause of acute tonsillar or pharyngeal infection in other individuals. If one accepts the work of G. H. Dick and G. F. Dick[6] and recognizes a hemolytic streptococcus as the cause of scarlet fever, and if one remembers that the hemolytic streptococci found in tonsils are culturally similar to those associated with scarlet fever, the importance of these statements is evident. It is possible that there are chronic scarlet fever carriers who harbor the causative organism in their tonsils and intermittently spread the disease.

As far as the patient himself is concerned the clinical focal infection importance of hemolytic streptococci in the tonsils seems to be less than has been commonly supposed. However, too much emphasis cannot be laid upon the fact that only hemolytic streptococci inside the tonsil where they have been dormant and walled off for a long time are being considered. The negative findings in such a study do not lessen the clinical value of positive hemolytic streptococcus cultures in cases of acute pharyngitis, tonsillitis, septic sore throat and infections where their casual relationship is well known.

—G. H. R.

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NOTES

For the first eleven months of 1924 there was a notable decrease in the number of cases of communicable disease reported, due very largely to the fact that the number of measles cases has been greatly reduced. Up to December 1st, last year, there had been reported 28,000 cases of measles, whereas during the same period this year there have been less than 18,000; a decrease of more then 10,000 cases.

Whooping cough, diphtheria and pneumonia all show marked decreases, that for diphtheria amounting to 22½ per cent.

The most notable increase has been in smallpox, which shows a gain of 2,600 cases, and in poliomyelitis of which there were reported 617 cases for this eleven months, as compared with thirty-nine last year.

A daily query received by the laboratory of the Michigan Department of Health involves the color of antitoxin.

Color of antitoxin in the syringe bears no relation to the potency or safety of the product. It is a result of the method of manufacture and is definitely related to the amount of preservative used and the thickness of the cake of the globulin fraction as pressed in the filter press. All antitoxin distributed by the Michigan Department of Health, as well as other biologicals, is retested for safety and potency before being placed in the hands of the physicians. Duplicates of each number are stored in our refrigerators until all packages of that lot number have either been used or been returned to the manufacturer for exchange.

There are more safeguards placed around the distribution of biological products than any other therapeutic agent.

Birth certificates are now issued by the department to parents of children born in Michigan since March 1, 1924. The certificate shows that the birth of the child has been duly registered with the Michigan Department of Health.

Care on the part of physicians and others in filling in the original certificate, particularly in the matter of spelling and legible writing of names and post office addresses, will facilitate the sending out of the certificates. The appreciation of parents is clearly shown by the many letters of acknowledgement, and by the requests for certificates for older children.

Whenever and wherever the number of smallpox cases and deaths increases, we are again furnished with unanswerable arguments for vaccination. Of this year's smallpox cases in Michigan, 85 per cent gave a history of never having been vaccinated. Dr. C. J. Vaux, the health commissioner of Pittsburgh writes that 90 per cent of the cases reported during 1924 have never been successfully vaccinated. Dr. A. J. Chesley, the state health commissioner, places the Minnesota figure for fatal cases at 89 per cent. All these statistics are interesting, but they only add unnecessary proof to our already thoroughly grounded knowledge

about vaccination. It is deplorable that enough smallpox cases have occurred this year to make such compilations possible, and that the public have not learned from the experience of previous years, and decades, to protect themselves.

The close association between scarlet fever and sore throat is well known. In the light of our knowledge recently acquired from the work of Dochez and the Dicks, it seems fairly certain that the many sore throats which occur during scarlet fever outbreaks are really cases of the latter disease, even though they never have any visible skin eruption. The public health application of these statements is plain. Cases of streptococcus sore throat should always be isolated according to law, but during these periods of high scarlet fever incidence, these isolations should be carried out consistently and strictly. School children found to have sore throats should be excluded until it is definitely established that they are not suffering from scarlet fever.

Comparatively few physicians realize when they fill in a death certificate, that they are completing a legal document and that the information placed thereon is filed for all time. A request sent out from the State Department of Health not long ago, for additional information on the death certificate, listed a reply with the following statement: "and doctor won't it be possible some time to have these certificates destroyed, for when we come to the end and meet some of our mistakes on the other shore and find out what they really died of, it will take half the joy out of Heave nto think of the record we left behind."

Every physician in the state has been supplied with a copy of the Thirtieth Decennial Revision of the International List of Causes of Death and where it is possible so to do statements of cause should be in the exact language of the list. The statistical office cannot afford to guess at what a physician means, at the same time they cannot afford to put every certificate which is not clearly stated, in the "cause unknown" column and this necessitates an enormous amount of inquiry. For instance, peritonitis cannot be accepted as a cause of death. Rarely, if ever, is it idiopathic and inquiry changes this character of certificates in at least 95 per cent of the cases. If the cause is peritonitis and the physician does not know the cause of peritonitis, he should so state on the death certificate: "Peritonitis, cause unknown." typhoid fever, appendicitis, puerperal septicemia and trauma are very often concealed under this title.

Then again, a very large number of violent deaths have to be queried because the kind of violence is not stated. From the standpoint of classification it is not important to know that it was a fractured skull, but what caused the fracture. Was it an automobile accident, a fall, injury by machinery, or an accident in a mine or quarry?

Bronchial pneumonia is another bad statement, unless the cause is a primary broncho pneumonia. This disease is usually due to a secondary infection and where this is true, the primary disease should always be stated, as for instance, measles followed by broncho pneumonia.

Our vital statistics will be of value in the prevention of disease and the prolongation of life, only as they contain correct information and for the medical information, this matter rests entirely in the hands of the practicing physician who signs the death certificate.

It is almost impossible to pick up any current publication without finding some reference to deaths from automobile accidents, but the mere knowledge that deaths from this cause have occurred is not sufficient. If this menace on our highways is to be greatly reduced, we must know something more about it. The examination of the death certificate does not, as a rule, give any information beyond the fact that the automobile was a factor in the death; whether or not the deceased was a pedestrian, driver or passenger does not usually appear.

For the first ten months of this year, the increase in the number of deaths over the corresponding period of last year, was equivalent to 32½ per cent, but while the number of deaths has not quite kept pace with the increased number of automobiles in use, it has at no time during the last fourteen years been very far behind, in spite of the fact that the automobile itself has been wonderfully improved, is much more easily handled and drivers, of course, are, theoretically at least, more experienced.

In order to get more definite information as to why these accidents are occurring, the Michigan Department of Health has instituted a system of investigation and in the case of every death that is reported, where an automobile is involved, a questionnaire is sent out in the endeavor to elicit definite information. This questionnaire is as follows: Was deceased the driver of the automobile, passenger therein, pedestrian, or in other vehicle?..... Were other persons killed or injured?..... Was car supposed to be in good mechanical condi-

tion as to brakes, etc.? ..... Was driver experienced, competent and sober? ..... Sex..... Age..... Was liquor found in car?..... Was accident due to skid, wet pavement, loose gravel, curve, or other road condition?..... ..... If collision with another automobile, describe. (Bright Lights?)..... If deceased was a pedestrian, describe. .... If a collision with a railroad train or interurban, was crossing protected by automatic signals, gates or flagman?..... ..... Was track visible in both directions?..... Had driver any previous accidents?.....

While this system has just been inaugurated with the deaths reported in October, the department has already received some very interesting information.

Physicians would add greatly to the success of this investigation if, in completing their death certificate, they would note briefly the facts connected therewith. This again brings the question of medical statement on the death certificate, which should always state when an automobile is involved. Causes of death from violence are classified in accordance with the kind of violence rather than the result. A fractured skull is not of interest in the classification of the cause of death, but the cause of the fracture, such as a fall, automobile accident, traumatism by machinery or whatever the cause may be.

A recent certificate giving the cause of death as a fractured skull, was queried and a very pat reply appeared on the bottom of the letter: "Motorcycle, moonshine, speed, curve, ditch." This is the kind of information that will enable us to make an intelligent study of this rapidly increasing cause of death and possibly suggest remedial legislation.

TREATMENT OF SHOCK WITH GLUCOSE INFUSIONS AND INSULIN

In three cases cited by David Fischer and Myron Snell, Milwaukee (Journal A. M. A., Dec. 13, 1924), insulin subcutaneously and glucose intravenously caused a rapid cessation of the typical clinical symptoms of surgical shock, much more rapid and certain than by any previous methods heretofore tried. A sterile, chemically pure solution of glucose is used, preferably of 10 per cent strength; 500 or 1,000 c.c. may be given, depending on the severity of the condition to be treated. The usual sterile precautions are taken as in other intravenous medications. The solution is allowed to flow into the veins at a very slow rate, so that at least one hour is consumed from the beginning to the end of administration; the longer the time, the better. The amount of insulin to be used depends entirely on the amount of injected glucose. For every 3 gm. of injected glucose, one unit of U-20 insulin should be used; and if H-20 insulin is used, one unit for every 2 gm. The total amount of insulin to be given should be divided intot two equal doses, one part given five minutes after the beginning of the glucose administration, and the remainder at the end of the administration. So long as glucose appears in the urine, one need not fear an insulin reaction, for this acts as a safety guide and shows that there is more glucose present in the blood stream than can be taken care of by the introduced insulin. This glucose can be driven off by the injection of a small additional amount of insulin. Since glucose has a diuretic action, and tends to deplete the body tissues of fluids, it is the author's custom to give at the same time fluids by rectum or hypodermoclysis.

PERIODIC PHYSICAL EXAMINATIONS

About 1870, a Dr. Dobell of England suggested that periodic physical examinations be provided by life insurance companies to the holders of policies. In 1900, Dr. George M. Gould read before the Section on Practice of Medicine of the American Medical Association a paper which contains practically all the valid arguments that have since been used to urge such examinations on the medical profession and on the public. Since that date, papers have appeared at an increasing rate, one of the most significant, as pointed out by Dr. E. B. Edie,[1] being the recommendation by Dr. Burnside Foster in 1909 to the Association of Life Insurance Medical Directors that such examinations be given to holders of policies every five years. As stated editorially a few weeks ago, the American Medical Association is co-operating actively in plans for promoting periodic health examinations among the public, and in devising methods whereby this function of the family physician will be retained in his hands, rather than delegated to commercial or pseudophilanthropic organizations not adequately controlled. In his consideration of the subject, Dr. Edie, as a member of the Committee on Public Relations of the Pennsylvania State Medical Society, contends that any practitioner can plan and conduct a campaign in his own community with the assurance that some citizens will be found favorable to the movement and that a gradually increasing portion of the population will seek such examinations. The individual physician must be ready to give his own patients a type of physical examination that will be above reproach.[2] It should be needless at this time to urge on any physician the importance of this campaign as a means for prolonging life, but it seems to be necessary to urge that the individual physician become thoroughly interested, instead of permitting such examinations to become the business of those who are only too willing to exploit the practice of medicine. "The acid test of the physician's faith in health examinations," says Dr. Edie, "indeed, of his faith in the science and art of medicine, is that he has an annual examination made of himself." As was described a few months ago, one hundred members of the Kings County Medical Society in Brooklyn submitted themselves to such examination's, and the results published were a practical means of focusing public attention on the plan. It is time that physicians everywhere rise to the occasion and become a part of the leadership in this movement.—Jour. A. M. A., Dec. 13, 1924.

1. Edie, E. B.: Periodic Health Examinations, Internat. Clin. 4:91, 1924.

2. The Bureau of Health and Public Instruction of the American Medical Association has prepared a standard blank for conducting such examinations, and has available reprints of an article concerning testing methods, samples of which will be sent on request.

The Journal
OF THE
Michigan State Medical Society
ISSUED MONTHLY UNDER THE DIRECTION OF THE COUNCIL

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C. D. Darling.....Ann Arbor
J. D. Bruce.....Saginaw

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JANUARY, 1925

Report Malpractice Threats Immediately to Doctor F. B. Tibbals, 1212 Kresge Building, Detroit, Michigan.

Editorials

NEW YEAR GREETINGS

Be still and hold thy peace and hide
Thy dreams from all the world beside,
From the soul's secret depths they'll rise
And shed their soft light on thine eyes,
As stars the nightly heavens fill;
Cherish them fondly and be still.

How shall thy heart its longings show?
Thy will, how shall thy neighbor know?
How shall the world thine aims descry?
Betray thy dreams—and 'tis a lie!
Disturb, and thou beclouds't the rill;
Feed on thy visions and be still!

Learn to live in thyself apart,
In the dark confines of thine heart
Worlds of enchanted fancies dwell,
Earth's sordid tumult breaks the spell;
Their still small beam days fierce lights kill;
List to their music, and be still!

(*After the Russian of Tyouchev.*)

The wisdom expressed in the above voices an individualism that approaches the ideal. To be still, to listen, to obey, to work and to wrought. What better code for human endeavor can we formulate? This does not imply that one must retire into cloistered existence. It is not a command to withdraw from man and events apart. On the contrary it bids one to labor with and among his fellow man and then as sure as night will follow day, recognition, honor and accomplishments worth while will create the halo that appraises life and individuality.

So in extending to our members and readers our hearty good wishes for a Happy New Year we commend that you strive for the attainment of these ends. Prosperity, joy and contentment will then be yours when 1925 passes into history.

POST-GRADUATE CONFERENCES

Just as rapidly as arrangements can be perfected these Post-Graduate Conferences will be conducted in the fourteen Councilor Districts of the State. Our Executive Committee and Secretary are busily engaged in perfecting the schedules and will make contact with the officers of each district and work with them in formulating local arrangements.

The Committee has a definite general plan and policy. This is requisite for systematic work and accomplishments. The fundamental purpose is to provide programs that will deal primarily with the consideration of scientific advancements in medicine and recognized methods of diagnosis by the employment of modern means and methods. The purpose being to attain perfection in the examination of individuals and the making of accurate diagnoses. Modern methods of treatment and the employment of the newer proven methods of treatment will not be stressed in the first Conference; these will be largely reserved for the second meeting that is planed for each district. This statement is made to anticipate expressions of desire to have incorporated in the first program discussions of treatment.

The plan that has been formulated, we believe, incorporates a scope of activity that is certain to be of value and benefit to every member and marks the commencement of organizational activity that enhances individual membership. The interest that has been evidenced at the three conferences that have been conducted attests to the wisdom of instituting this movement. We urge, once again, that when the conference is announced for your district that you let nothing prevent your being in attendance. We welcome your suggestions and comments.

We are attaching to this editorial a *tentative* schedule of dates for the holding of our Post-Graduate Conferences during the first half of this year. It will be noted that from two to three of these conferences are planned for each month. There is a large amount of preliminary work to be performed to complete the details for each meeting. Our Executive-Secretary, Mr. Smith, appears on the scene two days be-

fore each conference. It is impossible to lessen the time between each meeting place.

Exact dates, programs, arrangement of details will be taken up with the officers of each district as rapidly as possible. We are imparting this advance information solely for the purpose to advise when these conferences will occur in your district. The schedule is as follows:

Tentative Dates for the Post-Graduate Medical Conferences, 1925:

1st District—Detroit, April 16-30.
2nd District—Hillsdale, January 29.
3rd District—Battle Creek, March 5.
5th District—Grand Rapids, March 19.
6th District—Flint, February 26.
8th District—Saginaw, January 20.
10th District—Bay City, January 22.
11th District—Muskegon, April 2.
12th District—Upper Peninsula, July.
13th District—Petoskey, May.
14th District—Ann Arbor, February 12.

THE PORT HURON POST-GRADUATE CONFERENCE

On Monday, December 10th, 1924, the first Post-Graduate Medical Conference of the 7th District, embracing the counties of Huron, Lapeer, Sanilac, and St. Clair, was held at Port Huron in the parlors of the Harrington Hotel.

The conference opened at 10 a. m. and continued throughout the day untill 6 p. m.

We were more than satisfied to have an attendance of fifty physicians—all of whom expressed delight upon the quality of the papers and the interesting and admirable manner in which they were respectively presented.

From personal observation and conversation with many of the visiting physicians, some of whom drove over a hundred miles to attend, I am satisfied that these conferences fill a much desired want and are productive of incalculable benefit to the profession.

The visiting physicians expressed to me the opinion that the State Medical Society, by thus arranging these clinics which have for their objective the presentation of the leading advances in medicine and surgery, was doing something tangible for its members—the result of which would be the cementing and furtherance of the loyalty of its members to the parent society; and in addition, by attracting the interest of our legitimate non-members to add a goodly increase to our state and county membership.

The increase in the Annual Dues to $10 should meet with no objection from any member when the State Society, free of charge to the local societies, puts on such an interesting, instructive, and successful meeting as was held here December 10th.

Right here I want to pay tribute to yourself and your Executive-Secretary for the selection of such a worthy program and for the efficient and business-like manner which our Executive-Secretary, Mr. Smith, displayed here in the arrangemetn of the clinics with their various details.

In the evening, in the hotel dining room, Dr. J. B. Kennedy, of Detroit, gave a most interesting public address, the caption of which was, "The Conservation of Your Personal Health." The physician-orator was at his best and in his inimitable style held his auditors spellbound as he related the discoveries and achievements of scientific medicine—and then showing with a concise clearness their application to personal and public health.

My conclusions as to the value of our post-graduate clinics and public meetings, are that we are on the right track to bring about the much-to-be-cherished desideratum: 1st. To have and to hold the complete co-operation of all of the members of the State Society and; 2nd. To win the interest and approbation of the general public to the high ideals of scientific medicine by taking them all into our confidence and telling them—as well as showing them—what the medical profession is doing, and trying to do, for humanity.

As Councilor for the 7th District, on behalf of its members I wish to express our gratitude to the phyiscians, whose names appear in the appended program, for the very splendid manner in which they presented their subjects. No profession can ever fail or be displaced so long as its members emulate the fine spirit shown by the gentlemen who conducted our first post-graduate medical conference.

Cordially yours,
Alex J. Mackenzie,
Councilor, 7th Dist.

PROGRAM

10 a. m.—Opening Statement. President Clancy, Councilor MacKenzie, Executive Secretary Smith.

10:30 a. m—"Physical Examinations," Elmer Eggleston, M. D., Gastro Enterologist, Battle Creek Sanitarium.

11:00 a. m.—Questions.

11:10 a. m.—"Modern Treatment of Fractures of the Humerus, Colles Fracture and Potts Fracture," (Demonstration), A. D. LaFerte, Jr., M. D., Detroit.

11:50 a. m.—Questions.

12:15-1:30 p m.—Luncheon. Two Fifteen Minute Talks.

1:30 p. m.—"Diagnosis of Gastric and Duodenal Ulcer," Elmer Eggleston, M. D.

1:50 p. m.—Questions.

2:00 p. m.—"Diagnosis of Intestinal Obstruction," Angus McLean, M. D., Detroit, Ex-president Michigan State Medical Society.

2:20 p. m.—Questions.

2:30 p. m.—"What Modern Obstetrical Care Implies," Ward Seeley, M. D., Detroit, Harper Hospital.

2:50 p. m.—Questions.

3:00 p. m.—"Diagnosis of Heart Lesions," W. J. Wilson, M. D., Detroit, Harper Hospital.

3:20 p. m.—Questions.

3:30 p. m.—"Pelvic Inflammatory Diseases," Ward Seeley, M. D., Detroit, Harper Hospital.

3:50 p. m.—Questions.
4:00 p. m.—"Insulin," Hugo Freund, M. D., Detroit, Harper Hospital.
4:20 p. m.—Questions.
4:30 p. m.—"Digitalis Therapy," W. J. Wilson, M. D., Detroit.
4:50 p. m.—Questions.
5:00 p. m.—"Therapeutic Agents—Gentian Violet, Mercurochrome, Etc." Hugo Freund, M. D., Detroit.
5:20 p. m.—Questions.
5:30 p. m.—"Surgery of the Thyroid," Angus McLean, M D., Detroit.
Questions.
6:30-8:00 p. m.—Dinner.
8:00 p. m.—Public Meeting; J. B. Kennedy, M. D., Detroit, Chief of Surgical Service, Grace Hospital.
This is a laymen's public meeting to which a cordial invitation is extended to all. Urge your friends to come.

THE POST-GRADUATE MEDICAL CONFERENCES

Four thousand people, out of which 165 were physicians, have come in direct contact with the aims and activities of the Michigan State Medical Society extension work since the beginning of its program at Traverse City, November 18. Clinics, lectures and public meetings have been held at Traverse City, Port Huron and Niles.

Beginning in the forenoon of December 10, and continuing throughout the day, 45 physicians of St. Claire, Huron, Sanilac and Lapeer counties returned to their studies by attending and participating in diagnostic clinics, listening to lectures and asking questions. Eminent medical men and specialists delivered 11 papers on subjects of vital importance to the practicing physician. That these lectures were well received, that they brought the message sought, was evidenced by the intense interest which prevailed throughout the meeting and the enthusiasm with which the program was received.

Elsewhere in Port Huron 1,250 children listened to the rules of health and bodily care as laid down by understanding and entertaining speakers. It was in all respect a health day for the "thumb of Michigan." That the parents of these children appreciated what the physicians were doing was evidenced by the audience which attended the public meeting which was held in the evening. Mayor J. B. McIlwain presided at the public meeting. During his introduction the Mayor brought out the significant fact that any health measures in which doctors and public are jointly interested must make for a better citizenship and better and more ideal living conditions.

Close upon the Port Huron meeting followed a similar conference at Niles, on Dec. 17, where the attendance of physicians exceeded that at any previous meeting. Physicians attended from Berrien, Kalamazoo, VanBuren, Allegan and Cass counties and 10 physicians came over from South Bend, Ind. Lectures were given in the schools and a public meeting was held in the evening. The subject of the meeting was "Physical and Mental Sunshine." Dr. J. S. Pritchard, of Battle Creek, spoke on the work of Dr. Rollier in France on the Alpine slope, who has obtained splendid results in the treatment of tubercular and malignant infections with the aid of sunshine. As evidence of the public interest, the only complaints that were heard was that the lecture was too short.

These clinical lectures and discussions constitute a post-graduate work that no physician can afford to overlook. It saves him the time required in extensive travel and repeated absence from his home and practice. As the extension works progresses the clinical opportunities expand and with each meeting more physicians and more people show an increasing interest.

THE NILES POST-GRADUATE CONFERENCE

A post-graduate medical conference for the physicians of the Fourth Councilor District was held at Niles on December 17th. The meeting was well attended, about seventy-eight physicians registering during the day. The program was well arranged, affording a great variety of topics all of which were of interest to any one engaged in the practice of medicine.

The meeting began at 10:45 a. m. and was concluded a few minutes after six. There was an intermission of about an hour and a half for lunch. This was a long session, but the interest did not seem to lag at any time. The men in attendance at this meeting showed a sincere desire to make the best use of their time, maintaining their interest throughout the day. The subjects were discussed in a concise, practical and scientific manner. There were no absentees among those whose names appeared on the printed program. The district certainly wishes to express its sincere thanks to each man who took part in presenting this program.

As Councilor for the Fourth District, I can report to the Society a most profitable day for those who attended the Niles meeting. We hope to have another such conference later in the year. Judging from the expressions of approval from those present at this meeting we should double the attendance at the next conference.

Especial mention should be made of the very fine luncheon and dinner served by the ladies of the Trinity Episcopal church. The trinity Church Community House made an ideal place for putting on such a conference.

John B. Jackson, Councilor

The program was as follows:

10 a. m.—Opening Statements. J. B. Jackson, M. D., Kalamazoo, Mich., Councilor Fourth District, Presiding. Executive Secretary Smith.

10:45—"Periodical Examinations and the Doctor's Job," B. R. Corbus, M. D., Grand Rapids, Mich.

10:35—"Fundamentals of Neurological Examinations," C. D. Camp, M. D., Ann Arbor, Mich.

11:05—"Differential Diagnosis of the Chest," J. S. Pritchard, M. D., Battle Creek, Mich.

11:35—"Hypotension," M. A. Mortenson, M. D., Battle Creek, Mich.

12-1:30 p. m.—Luncheon. Two Fifteen Minute Talks.

1:30 p. m.—"Principles of Modern Obsterical Care," H. S. Collisi, M. D., Grand Rapids, Mich.

2 p. m.—"Physical Examination of Children," H. T. Clay, M. D., Grand Rapids, Mich.

2:30 p. m.—"Treatment of Neuralgias," C. D. Camp, M. D., Ann Arbor, Mich.

3 p. m.—"Fractures," F. C. Warnshuis, M. D., Grand Rapids, Mich.

3:30 p. m.—"Diagnosis of Intestinal Obstruction," B. R. Corbus, M. D., Grand Rapids, Mich.

4 p. m.—"Treatment of Bronchitis and Pneumonia," J. S. Pritchard, M. D.

4:30—"Interpretation of Physical Examination of the Heart," M. A. Mortenson, M. D.

5 p. m.—"Burns and Infections," F. C. Warnshuis, M. D.

5:30 p. m.—"Essentials of Infant Feeding," H. T. Clay, M. D.

6-8 p. m.—Dinner.

8 p. m.—Public Meeting. "Mental and Physical Sunshine in the Treatment of Disease," J. S. Pritchard, M. D.

OUR PRESIDENT'S MESSAGE—EDUCATION

In the progress of civilization change marks each succeeding era as checked off by the calendar and education has now come to occupy a place of greater importance than ever before in the history of America.

Time was when the artisan, the industrialist and even the man of business found fewer educational demands upon him than are made upon those similarly occupied in this age. In the earlier period, adequate facilities for the dissemination of knowledge were limited and rendered difficult of attainment, because of the environment in which the majority lived, and their ideals and ambitions were definitely smothered in the struggle to meet the persistent urge of physical necessities. Hence, the pathway toward broader training and mental development was reserved for the fortunate few, whose life opportunities afforded them the privilege of liberal instruction.

Later, and coincident with the commercial and industrial development of our nation, came wealth and power, and likewise the fruition of hopes deferred, in respect to bringing more knowledge to the people of all classes. As a result, from the university down the line to the township school, great changes have been made, and today all grades of education may be had for the asking.

Responsive to public sentiment there has grown up an extensive propaganda in behalf of greater learning, with so widespread scope that it ha sbecome the sounding note of the nation, the cost being cheerfully paid and the public ever calling for more. The American people have discovered the intrinsic value of education in all lines of the acid test of comparison, in service rendered on their account, and by adoption of this standard the best alone can hope for aproval while baser metals must be consigned to the scrap heap.

In fine, the public mind is becoming trained in the analytical science of differentiation between the real and the spurious, between concrete facts and vapid theories, and between scientific entities and superficial claims. Truly, this is a scientific age builded upon the ashes of departing mysticism.

Accepting the doctrine of universal education predicates the need for its distribution through channels best suited to the task, and having most intimate contact with the subjects taught. Therefore, to carry the message of medicine to the public coalition of forces from the University of Michigan and the State Medical Society has been effected, bringing into being the Joint Committee on Public Health Education, which has already accomplished much and with the full co-operation of Medical men will soon cover the entire state.

There is another phase of education of even greater moment which may well receive the endorsement and support of the medical profession as a whole, since it relates to the every day experience of the physician, and has for its end results the good of humanity.

And to lecture on Public Health matters to others falls far shotr of closing the curriculum, fo rsomething convincing to the public mind, in the way of enlarging our own store of knowledge may be helpful, and would seem essential in establishing mutual sentiments of accord and understanding.

The District Medical Conferences, recently instituted by the State Medical Society, offer a workable plan for conducting periodically in each District popular gatherings of physicians for the purpose of pursuing post graduate studies. These meetings are very valuable and none can afford to neglect taking advantage of them, since the latest word on things medical and surgical may be heard there. Besides, the leading teachers in the profession bring, for the benefit of all, their knowledge and experience in dealing with every day problems.

To everybody concerned it is apparent that the former cordial relations, based upon confidence, between patient and physician, have become less in evidence, and much thought has been expended in searching out the case. Responsibility is charged to the advent of the specialist, to the growth of hospitalization, and by others, to the reincarnation of the cults. But there is another view, perhaps worthy of consideration, and it has to do with factors coming down through the ages, as inheritances from an earlier medical profession, in which the mystic and the emperic played a leading role, and exclusiveness and dignity were regarded as the sine qua non.

The traditions of medicine, held sacred by its followers, does not harmonize with the reactions of an age launched upon a career of education, and possessing a consuming desire to learn the whys and the wherefores. And regret it or not, we must perforce yield to public demand, and tell the whole story of medicine and the wonders of its accomplishments in behalf of the human race. The record is an honorable one and we should find pride and gratification in its recital.

C. C. Clancy.

WHAT CONSTITUTES ADVERTISING?

On several occasions, recently, requests have been received for opinions as to what constitutes medical advertising. For the purpose of setting forth an interpretation of the subject the following opinions and definitions are set forth for the information and guidance of our members and to govern the officers of County Societies:

1. The Principles of Medical Ethics of the American Medical Association in Chapter II, Article I, Sec. 4, sets forth the following principle:

Sec. 4.—Solicitation of patients by physicians as individuals, or collectively in groups by whatsoever name these be called, or by institutions or organizations, whether by circulars or advertisements, or by personal communications, is unprofessional. This does not prohibit ethical institutions from a legitimate advertisement of location, physical surroundings and special class—if any—of patients accommodated. It is equally improfessional to procure patients by indirection through solicitors or agents of any kind or by indirect advertisement, or by furnishing or inspiring newspaper or magazine comments cocncerning cases in which the physician has been or is concerned. All other like self laudations defy the traditions and lower the tone of any profession and so are intolerable. The most worthy and effective advertisement possible, even for a young physician, and especially with his brother physicians, is the establishment of a well-merited reputation for professional ability and fidelity. This cannot be forced, but must be the outcome of character and conduct. The publication of or circulation of ordinary simple business cards, being a matter of personal taste and local custom, and sometimes of convenience, is not per se improper. As implied, it is unprofessional to disregard local customs and offend recognized ideals in publishing or circulating such cards.

It is unprofessional to promise radical cures; to boast of cures and secret methods of treatment or remedies; to exhibit certificates of skill or of success in the treatment of diseases; or to employ any method to gain the attention of the public for the purpose of obtaining patients.

In addition to the above principles, the following resolution adopted by the House of Delegates of the American Medical Association:

Resolutions on Questions of Ethics and Propriety Concerning Institutional Publicity:

Dr. George E. Follansbee, Ohio, presented the following, which was referred to the Reference Committee on Legislation and Public Relations. (37)

Whereas, Many problems and questions of ethics and propriety concerning institutional publicity are constantly arising; and,

Whereas, There is no definite published guide available to the directors and officials of medical institutions; and,

Whereas, There is a widespread need for such guidance; therefore be it

Resolved, By the House of Delegates of the merican Medical Association:

1. Publicity by clinics, hospitals, sanitariums and other semi-public medical institutions as to the quality of work done implies unusual and exceptional ability and efficiency on the part of their professional staffs and therefore is advertising of the medical men concerned. This type of advertising distinctly savors of quackery and is unethical.

2. Publicity by any such institution stating or implying that by reason of its exceptionally fine equipment and material resources, it is able to, or does, give the public better medical service than similar institutions are able or willing to render, is advertising for purposes of self-aggrandizement. Statements of this type are frequently exaggerated and misleading, are detrimental to the best interests of the public, of the institution concerned, and of true medical progress. Publicity of this kind is unethical.

3. Hospitals, sanitoriums and other similar public medical institutions must raise funds both for capital investment and running expenses from an interested public. Furnishing to the public facts concerning such an institution, its work, its aims and its ideals is legitimate and desirable. Such publicity deals in facts to which the public is entitled and i nwhich it is interested, and is therefore ethical, provided it carefully refrains from any comparisons, either direct or implied; therefore be it further

Resolved, That the proper officials of the American Medical Association be instructed to seek the co-operation of the American Hospital Association of these ethical standards.

Our Council has set forth the following interpretation that now serves as an additional light upon the question:

"First, The group or associated body of phy-

sicians is amendable to the same regulations and principles as is the individual physician."

"Second, The fact that two or more physicians have formed a partnership, group, or clinic, does not grant them special publicity privileges."

"Third, The creation of a group or Clinic dose not convey unusual publicity privileges, even though part of their activities may be of a charitable type."

To still further elucidate the discussion it is proper to impart the following interpretations that conform to expressed opinions uttered in this country.

MAILING OF ANNOUNCEMENTS

Local custom determines the standard. When no such standard exists it is recommended that the County Society be requested to set forth what shall be permissible in the wording of such announcements before a doctor resorts to sending out professional announcements or inserting cards in local newspapers. The mailing list to whom announcements are sent are to be limited to bonafide patients and personal acquaintances. It is proselyting and contrary to the principles of ethics governing medical consultations to send such announcements to individuals who have been seen in consultation with another physician, or to an individual who has been referred for consultation or operation by a fellow physician.

It is held that people, when desiring a certain physician's services, will find and locate that physician without being the recipient of formal announcements. The sending to individuals of announcements repeatedly or on least provocation is construed as solicitation and must be looked upon as unwarranted and so is unethical.

As a final summary it is well to observe that service, and not the printed announcement, is the desired medium for individual publicity.

ENDOWMENTS

Taxes alone do not support our universities and colleges. Tuition fees are necessarily small and a minor resource in the defrayment of an institution's expenses. Were it not for gifts and endowments our higher educational institutions would be financially embarrassed. Neither would they have accomplished what has and is being accomplished. Our American colleges would be few and of inferior type had it not been for endowments and special gifts.

County and State Medical Societies are present day educational institutions. Under our present plan and scope of activity their educational features are of more extended application and are planned to attain further reaching results. To extend, to secure a wider demonstration of activity and to cause each year greater accomplishments are the ends that are being sought by those who are engaged in medical education work that is sponsored by our State and County Societies.

One of our most important responsibilities is to aid the member to render better professional services and to become more proficient in his work. In the endeavor to do this we are inspiring better and more efficient services for the public.

Our State Society is developing such a program. It hopes to extend the work as rapidly as possible. The one retarding factor is limited finances. This type of work costs money and our receipts from dues restrict the degree of progress. Just as our colleges and universities stand in need of gifts and endowments, so does our State Medical Society in order that it may develop its educational policy.

In connection therewith we are advancing the suggestion for the creation of an endowment fund. Surely there are some, so blessed with funds that they can now, or by their wills, convey to our society gifts or endowments of from $500 to $50,000 to create an educational endowment fund. If we had such a fund of from $250,000 to $500,000, the interest earnings, leaving the principle intact, would provide the funds whereby your officers could establish a periodic postgraduate course of study and instruction in every Councilor District. Such courses to be of four to six days duration and conducted at three month intervals. Let Michigan lead in this plan and program. To do so we solicit such contributions to an endowment fund. Will you, if so endowed, consider this plan and may it appeal sufficiently to awaken the spirit of contribution.

AN INVITATION TO AID

We are advised that by reason of the death of Beverly D. Harrison, his widow is left in somewhat destitute circumstances. We are also requested to come to her relief.

Dr. Harrison served as Secretary of the State Board of Registration for some twenty-five years. He accomplished much for the good and the advancement of our profession individually and collectively. For his services he was but meagerly remunerated. His salary was barely sufficient to defray living expenses. His resources left are such as to be insufficient to provide comforts for his wife in her declining years.

Therefore, at the request of a goodly number of members, The Journal has agreed to act as a medium to solicit voluntary subscriptions from physicians, to create a fund for Mrs. Harrison. Any doctor, desiring to subscribe

can do so by sending their contributions to the Editor, Powers' Theatre Bldg., Grand Rapids.

OUR DECEASED MEMBERS

From reports received the following former members responded to the final summons during the year 1924.

DEATHS

L. L. Mills, Webberville.
Robert B. Honey, Dexter.
George M. Hull, Ypsilanti.
Morton Gallagher, Bay City.
H. R. Pearce, Battle Creek.
Daniel La Ferte, Detroit.
Joseph Vandeventer, Leesburg, Va., formerly of Ispheming, Mich.
Francis Schilling, Nashville.
H. W. Whitmore, Quincy.
B. B. Godfrey, Holland.
C. F. Smith, Muskegon.
George W. Fralick, Maple City.
George D. Carnes, South Haven.
Charles Truman Spencer, Webberville.
W. W. Walton, Mancelona.
H. M. Holcomb, Lansing.
F. J. Knight, Charlotte.
Theodore A. McGraw, Detroit.
Perry Schurtz, Grand Rapids.
Carroll Lawrence Storey, Detroit.
MoffattFlynn, Bay City.
Beverly D. Harrison, Detroit.
J. E. Scallon, Houghton.

In reverence do we pay tribute and record their cessation of labor in our archieves. We recognize that each in his own sphere, his own field of activity contributed a full measure of useful deeds that served to reflect dedicated lives devoted to their fellow men and to the general welfare of society. As co-workers we mourn their deaths and record the esteem in which they were held.

OUR LEGISLATIVE POLICY

The question as to what shall be our policy as to legislation that may arise in the present session of our legislature has received full and considerate discussion by our Council. There is also published in this issue a lengthy communication from Dr. Woodward of the A. M. A. Bureau of Legal Medicine and Legislation. The Council at its special meeting last month adopted the following resolution:

That the Council hereby instructs its Executives and the Legislative Committee to assume the following policies and procedures in dealing with all matters pertaining to medical legislation that may arise during the coming session of the Legislature:

(a) There shall be no paid lobbyist in Lansing.

(b) The Legislative Committee shall resort to all honorable means to educate and inform members of the legislature, relative to medical facts and requirements for the safe guarding of the public's health, calling upon members of the Council and component societies to aid them.

(c) The Council directs the Legislative Committee to submit to the Executive Committee of the Council a plan of educational activity regarding medical legislation.

(d) It is recommended that the Legislative Committee consider the expediency of delegating to a lay representative the responsibility of appearing before all Committee Hearings of the Legislature bearing upon Medical legislation.

The Committee on Legislation, observant of these instructions, purposes to evidence intensified activity. It is incumbent, however, that the Committee receive statewide co-operation from our members. The direction and scope of this co-operation will be conveyed to you by individual communication with the officers of County Societies. When this communication is received, prompt attention will be imperative. It is hoped that there will be no delay in complying with the instructions issued.

PUBLIC HEALTH DEPARTMENT

With this issue of The Journal we are reinstituting a department devoted to public health matters. It will be a feature of subsequent issues. The copy material will be supplied by Dr. R. M. Olin, State Commissioner of Health, and designated memers of his staff.

Public health and public health measures are a concern of every medical man. A definite responsibility exists. It is incumbent that individually and collectively we recognize this responsibility and join in the maintenance of an effective public health movement. The avenues along which we may become active will be outlined in this department. It will also acquaint us with the work that is being done and the plans that are being developed by our State Department of Health. Our members are urged to inform themselves fully upon these matters and to support a program of constructive public health education and activity in the state.

COUNCIL MEETING

The Council of the Michigan State Medical Society will convene for its regular mid-winter meeting in Battle Creek, ————, Jaunary 14th, 1925, at 9 a. m. Any business that properly comes before this executive body will be in order.

The Council will meet with the Joint Committee on Public Health Education at Noon.

F. C. Warnshuis, Secretary.

Editorial Comments

We would appreciate receiving individual comments and appraisals as well as suggestions from members in whose districts Post-Graduate Clinical Conferences have been held. Our object is two-fold—to profit by such opinions and suggestions so as tot improve future Conferences tnd to stimulate members in the Districts where Conferences are to be held to embrace and receive the most benefit from them. Will you not supply us with this assistance? We will not publish them, if you so indicate, or, we will publish them omit-

ting names—just as you desire. We are desirous of receiving your frank opinion for it is only by means of this assistance from our members that we will be able to develop this feature of organizational work. Send in your communications.

We would that every member would realize that in the magazine Hygeia, he has a personal emissary that mingles with the public and enlightens them as to medical facts and practices. Hygeia is an emissary that accomplishes ends in a manner not otherwise possible. As such Hygeia merits and is entitled to the support of every doctor. We regret to state that Hygeia is not receiving this support. Why, we can't perceive. This coming month and year should record a change in our attitude. We must awaken to the fact that an opportunity is being ignored. Shall we not determine to change the situation and put Hygeia over in Michigan?

The Journal purposes to be more than a publication that supplies each member with worth-while original articles, editorial observations, society and state news. That extended purpose is a desire to aid the member in solving individual problems and supplying individual information. That is the purpose of the department devoted to "Among Our Letters." We invite you to employ that department and to make use of that service. We also request that you use it for the expression of your comments, opinions and suggestions. Make it an open forum that will create interest and impart instruction. We are dependent upon each member to cause it to serve that purpose. Please utilize it.

Please note the new department, commencing in this issue, devoted to Public Health Activities. Each issue will contain items that will be of assistance and interest to every practcing physician. We are delighted to add this feature to our Journal thereby enhancing its value. It is but another evidence of what your state organization is undertaking to enhance the value of membership. We are of the opinion that no other organization gives you as much in return for the annual dues you pay as does your County and State Medical Society. If you fail to derive full profit the reason is that you are not grasping the opportunity to receive these numerous benefits. Determine now to be a full participating member. You are the personal loser if you neglect to do so.

Your 1925 dues are now payable. Send them in to your County Secretary. It is as easy to do so now, during January, as it is in March and April. Your County Secretary will appreciate your early remittance. Lighten his official duties by doing so.

In Nebraska a questionaire was sent to the members of the State Medical Society. The first question was: "What should be the attitude of the medical profession toward the various cults?"

The replies were: "Ignore, 216—Compel by law, 11—Educate the laity, 30—open antagonism, 29—Tolerance, 37—Equalize science requirements, 65—Doubtful or no answer, 10. The second question was: "Should the State Medical Society engage in propaganda to educate the public?"

The replies were: Yes 267; No, 89. These replies are quoted to convey the trend of medical opinion in connction with the solution of our problems.

We have a brother who has been in China for some twenty years. In discussing personal experiences he narrated that when first he went to China all Chinamen looked alike to him, but that after a while he got to recognize individuals. The application of this experience may be made to our medical problems. To the uninformed they apepar as being all alike, but when a study is made individually fundamentals will be perceived. Their solution will materially aid in clearing up the entire situation.

In the death of Beverly Drake Harison, the profession has lost a man who has been an outstanding figure in our state medical life during the past thirty years. Our medical practice act and the provisions therein were only made possible by Dr. Harison's aggressive activity. That which our State Board has accomplished has been due to his executive administration of the policies established. No one was as familiar with the legal points involved as was this deceased secretary. Elsewhere in this issue will be found a narrative of his life. The years will be long and many ere our memories become dim of this man who has written his character in a lasting manner in our medical history and for our good.

A special meeting of The Council was held in Detroit on December 11th. The minutes of that meeting will be found in this issue. Look for them.

We are in full accord with the movement seeking to obtain accurate and complete case history and records for hospital patients. However, such a movement is useless and ridiculous unless the hospital and nursing staffs are compelled to elevate their type and standard of service to the patient. Records alone will not improve or conserve the patient's welfare. Nursing service is of far greater importance. We are somewhat inclined to resent this continued harping upon doctors about records and little or no attention paid to nursing service and hospital care for the patient. Unless that is evidenced, it is all rot to rant about records. Then, too, is the query not pertinent that Boards of Trustees had better concern themselves as to administrative and nursing services in their hospitals and perfect these first before seeking to assume the role of supervising censors of doctors and their penwork.

April 22nd, has been determined upon as the date for the holding of our Annual Conference of County Secretaries in Grand Rapids. The details of arrangements, program and entertainment will be announced in our next issue. County Secretaries are requested to note this date and arrange now to let nothing interfere with their attendance. This is one of our important meetings and each member of the Society will profit thereby.

Because of its importance we urge that you read the action taken by the Council regarding our legislative policy. The minutes of that meeting will be found in this issue.

We are in the midst of the so-called pneumonia season. Let it be remembered that bronchitis usually precedes pneumonia and that from its extension we encounter bronchial pneumonia. Lobar pneumonia is of lesser frequency. Experience also establishes that drugs exercise but little influence upon the disease. In a review of some fifty cases treated by different men some 70 different drugs were exhibited—utter rot, super-medication, polypharmacy, or whatever you wish to call it. The gamut from "cow-dung" to antiphlogistine is and smells of barbaric days. Yes we know that the

excuse is that the family and friends expect you to give and do something. Remember, however, that the family and friends are not as un-informed as they were twenty-five years ago. You will satisfy them and be giving something if you get them into a room and tell them the truth regarding pneumonia and make it clear to them that rest, quiet, ventilation, water and moderate elimination will accomplish more than a stand filled with drugs. By doing so morbidity and mortality will be lowered. You cannot hope to be a modern doctor, obtain modern results, if you continue to use what was discarded twenty-five years ago.

Don't think for a moment that the "Chiros" have not been active in interviewing members of the legislature. They also have levied assessments to pay for legal assistance and lobbying expenses. These members of the legislature are also your representatives. Some of you know them personally. You are the men to interview them personally and enlighten them as to facts and also the inconsistency of turning under-educated men free to treat conditions and endanger public and individual health. Unless you see and repeatedly interview these representatives they are going to be influenced by the "bunk" of the cultist. Because Jones has talked to your representative and senator do not assume it is unnecessary for you to do so. The more doctors from your district calling upon legislature members the better effective will be the result. Do not fail to do so. Keep at it.

Every physician is constantly importuned to try out some new remedy. The claims are always advanced in a plausible manner, but how often are the results only failure and disappointment?

"New and Nonofficial Remedies," issued by the Council on Pharmacy of the American Medical Association, is a reliable, handy guide to the merits of the newer medicinals.

It gives unbiased information on composition, action, dosage, physical and chemical properties, tests for identification and control, and names of manufacturers.

Thus the physician, even though not an expert in chemistry, may discriminate between worthy and the unworthy preparations that he is asked to prescribe. The pharmacist, catering to the best class of physicians in the dispensing of prescriptions, may benefit by this unfailing guide; and the manufacturer by taking advantage of processes, composition and advertising methods that have proved most favorable both to the public and to the profession, may profit immeasurably.

Newspapers advise us that a certain alienist is going to spring a new symptom complex in defense of an Illinois murderer. It's just such fool stunts and public pratting that lower the profession in the eyes of the people. An individuals bid for sensational publicity and a fee. Self above all else. Personal quest no matter how it reflects upon the group. Have we not had enough of this "blah" stuff?

For experience, education, amusement and human nature study, get a good car, fill it with five doctors and then drive home for a distance of 100 miles after attending an all day session of one of our Post-graduate Clinical Conferences. Let your five passengers be a chest specialist, an obstetrician, pediatiatrist, surgeon and layman. We assure an assortment of stories, old, new, bad and good. Interspersed you will receive edifying information as to the importance and accomplishments of each specialty and some brazen boasting. The 100 miles, even though an icy pavement prevetns ordinary speed and seven hours are consumed in covering the distance, will be a short summer evening drive and reveal what human mortals constitute our ranks. It will be a novel experience, Try it.

County officers have received instructions by letter as to legislative activity. Our State Committee requests this co-operation. Promptness in complying with these and future letters will be of material assistance. Please do not delay answers. Time is always an element. If your Committee is to be successful in its endeavors our County Officers and members must aid by whole hearted, prompt assistance.

Minutes of the Special Council Meeting
Detroit, Dec. 11, 1924

Pursuant to the call issued by the Chairman, a special meeting of the Council was held in the Book-Cadillac Hotel, Detroit on December 11, 1924.

1. The meeting was called to order at 9 a. m. by the Chairman, with the following Councilors present: Jackson, Walker, Greene, Darling, Burke, VanLeuvan, Bruce, Corbus, Ricker, Baird, MacKenzie, Randall. Secretary-Editor Warnshuis, Treasurer Welsh, President Clancy and Executive-Secretary Smith.

2. Dr. Lyons of Ann Arbor, and Dr. O'Reilly of Detroit, apepared before the Council, representing the State Dental Society. They requested that the Council endorse in behalf of the State Medical Society the plan that is being developed by the State Dental Society relative to representation on the State Commission of Health for the purpose of securing a state prophylactic dental campaign and education of the people:

Moved by Councilor Randall-Bruce, that the Council tender to the State Dental Society the endorsement of the Michigan State Medical Society for their campaign.

Carried.

SECRETARY-EDITOR'S REPORT

To the Council,
Michigan State Medical Society.
Gentlemen:

I am privileged to transfer to you my annual report for 1924. By instructions of the Chairman of the Council and of the Finance Committee, our books were closed on December 1st, thus causing the year to cover only an eleven months' period. This was occasioned by reason of this Special Meeting of the Council.

The financial audit made by Ernst & Ernst, bonded auditors, sets forth the Society's financial condition and is a sfollows:

December 9, 1924.

To the Council of the Michigan State Medical Society,
Dr. F. C. Warnshuis, Secretary,
Grand Rapids, Mich.

Gentlemen:

We have audited the books of account and record of the MICHIGAN STATE MEDICAL SOCIETY for the period of eleven months ended November 30, 1924, and submit herewith our report.

The results from financial operations of the Society for the eleven months under audit are set forth in the following summary:

JOURNAL INCOME	Amount	Per Cent
Subscriptions, Reprints, Advertising, Etc.	$13,008.23	100.00%
Less: Journal and Reprint Expense	10,587.77	81.39%
Profit on Journal Publication	$ 2,420.46	18.61%
DUES AND OTHER INCOME		
Membership Dues and Interest Earned	$ 3,110.34	100.00%
Less: Annual Meeting, Society Expense, Etc.	4,028.96	129.53%
Excess of Society Expense Over Dues, Etc.	*$ 918.62*	*29.53%*
NET INCOME	$ 1,501.84	

A statement of the Assets and Liabilities of the Society at November 30, 1924, is included elsewhere in this report, subject to the following comments:

Cash on deposit at November 30, 1924, was verified by direct correspondence with the Old National Bank, Grand Rapids, Mich. We traced all recorded Cash Receipts for the eleven months' period directly to the bank deposits, as shown by the bank statements. All recorded cash disbursements were found to be supported by cancelled bank checks, invoices, or other data on file.

Accounts Receivable were verified by trial balance of the individual accounts, but we did not correspond with the recorded debtors to further verify the accuracy of the book records. However, we analyzed the accounts as to age and have classified them according to date of charge as follows:

DATE OF CHARGE	Amount
November, 1924	$ 706.98
October, 1924	55.17
September, 1924	179.75
August, 1924	39.50
July, 1924	40.50
June, 1924	118.75
March 1st, to May 31st, 1924	56.34
December 1st, 1923, to February 29th, 1924	45.02
Prior to December 1, 1923	144.20
Total	$1,386.21

We inspected the bonds included under the caption of Securities Owned.

As far as we could ascertain, full provision has been made for all known liabilities of the Society at November 30, 1924, except for invoices aggregating $159.46 for expenses which Dr. Warnshuis stated applied to operations subsequent to November 30, 1924. The books of the Society show cash receipts of $94.00 from subscriptions to the Legislative Committee. In accordance with Dr. Warnshuis' statement that these collections reimbursed the Society for advances previously made to the Legislative Committee, we have included them in Net Worth in the preparation of this report.

We hereby certify that we have audited the books of account and record of the *Michigan State Medical Society* for the period of eleven months ended November 30, 1924, as kept by the Secretary-Editor, Dr. F. C. Warnshuis, and that, in our opinion, based upon the records examined and information obtained by us, the accompanying Statement of Assets and Liabilities is drawn up so as to set forth the correct financial position of the Society at November 30, 1924, and that the relative operating statement is correct.

Very truly yours,
ERNST & ERNST.

(SEAL)

STATEMENT OF ASSETS AND LIABILITIES

MICHIGAN STATE MEDICAL SOCIETY
November 30, 1924

ASSETS

CASH—		
On Deposit with Old National Bank		$ 15.97
ACCOUNTS RECEIVABLE—		
Due from Subscribers, Advertisers, Etc.		1,386.21
SECURITIES OWNED—		
Bonds of Citizens Telephone Company, (5%)	$2,000.00	
Bonds of Pen-Ohio Edison Company (6½%)	1,000.00	
Bonds of Dutch East Indies (5½%)	1,000.00	4,000.00
		$5,402.18

LIABILITIES

Advance for Advertising		$ 73.25
Due to Defense Fund		199.50
NET WORTH—		
Balance—Jan. 1, 1924	$3,533.59	
Advance to Legislative Committee Repaid by County Societies	94.00	$3,627.59
Add: Net Income for the 11 Months ended November 30, 1924	1,501.84	5,129.43
		$5,402.18

NOTE A—No provision has been made in this Statement for Accounts Payable of the Society aggregating $159.46, which Dr. Warnshuis stated were applicable to operations subsequent to November 30, 1924.

NOTE B—This Statement is subject to the comments contained in our "Certificate" included in and made a part of this report.

INCOME AND EXPENSE

MICHIGAN STATE MEDICAL SOCIETY

For the Eleven Months Ended November 30, 1924

INCOME—		
Sales	$ 5,936.80	
Journal Subscriptions and Reprint Sales	1,270.35	
Advertising Sales	5,801.08	
Membership Dues	2,920.20	
Interest Received	190.14	$16,118.57
EXPENSE—		
Journal Expense	$ 9,531.88	
Society Expense	3,247.09	
Reprint Expense	1,055.89	
Council Expense	208.97	
Expense of Delegates to A. M. A.	193.75	
Annual Meeting	379.15	14,616.73
NET INCOME		$ 1,501.84

SOCIETY

Our Society is composed of fifty-six County Societies. On January 1st, 1923, our membership was 2,827. At the close of the present fiscal year our membership is 2,822 in good standing, a loss of five members, with 469 delinquents.

Name of County	Active	Delinquent
Alpena	15	6
Antrim	8	7
Emmett-Barry	12	3
Bay	58	6
Benzie	2	6
Berrien	46	11
Calhoun	93	24
Cass	7	....
Cheboygan	1	10
Chippewa	21	8
Clinton	12	11
Delta	26	5
Dickinson-Iron	7	15
Eaton	19	17
Genesee	115	31
Gogebic	18	13
Grand Traverse	22	10
Gratiot-Isabella	31	11
Hillsdale	23	6
Houghton	38	26
Huron	7	15
Ingham	77	6
Jackson	65	....
Ionia	16	15
Kalamazoo	119	9
Kent	178	12
Lapeer	16	4
Lenawee	22	4
Manistee	10	1
Macomb	26	3
Marquette-Alger	34	3
Mason	2	6
Mecosta	19	1
Menominee	11	....
Midland	6	....
Monroe	26	....
Montcalm	17	....
Muskegon	63	5
Newaygo	13	....
Oakland	56	3
O. M. C. O. R. O.	9	....
Ontonagon	6	2
Osceola-Lake	....	5
Ottawa	27	5
Presque Isle	1	
Saginaw	48	21
Sanilac	12	4
Schoolcraft	5	1
Shiawassee	28	1
St. Clair	47	8
St. Joseph	16	4
Tri-County	19	4
Tuscola	20	5
Washtenaw	138	9
Wayne	1,160	84
	2,822	469

The year just closed has been an epochal one in our history. It marked the close of a period of organizational life covering fourteen years of scientific activity with a moderate manifestation of civic educational concern. It likewise, witnessed our formulating and instituting definite plans for a broadening of our scope of endeavor and meeting up to our present day responsibilities. These latter features have been fully outlined in our editorial work. I shall not recapitulate them in this report.

There are several problems that present themselves for solution at this meeting. They pertain to the work of 1925 and require careful consideration for the formulation of definite instructions to your executives and are as follows:

SECRETARY-EDITOR

1. With the forward step of securing a full time Executive Secretary the Council is called upon to determine,

(a) Shall the office of Secretary-Editor be divorced and all the duties of the secretary be assigned to the Executive Secretary?

(b) To whom, then, shall he report and be responsible?

(c) What disposition shall be made of the office of Editor and what duties shall devolve upon your Editor?

BUDGET FOR 1925

1. I have formulated a tentative estimate for a budget for 1925 and submitted it to the Chairman of the Finance Committee for consideration by the Council. The items should be definitely fixed by The Council.

POST-GRADUATE CONFERENCES

3. A report upon these will be made by the Chairman of County Societies Committee and our Executive-Secretary. To anticipate possible criticism arising from misunderstandings a statement should be formulated setting forth the purposes and scope of these conferences and the subjects that shall be considered upon the progress of meetings.

EXECUTIVE COMMITTEE OF THE COUNCIL

4. At the Mt. Clemens meeting an Executive Committee of the Council was created. Since the last Council meeting, two Executive

Committee meetings have been held and its minutes have been forwarded to each member of the Council. These minutes should by motion, be incorporated in our Council's proceedings.

ANNUAL MEETING

5. Under our new By-Laws all the arrangements for our annual meeting has been delegated to the Council. Instructions should be imparted as to how these arrangements should be perfected and by whom.

COUNTY SECRETARIES' CONFERENCE

6. Good resulted from the County Secretaries' Conference held last April. For a continuance of concerted state-wide activity these conferences are of greatest importance. I would recommend that authorization be granted and instructions be given to arrange for such a conference of County Secretaries in April in Grand Rapids.

LEGISLATION

7. Our legislature convenes with the ushering in of 1925. There is not the slightest doubt but what a number of public health measures, and medical practice regulations will be introduced for enactment. The query is pressingly pertinent: What is to be our program? What instructions shall be imparted to our Legislative Committee and executives? What participation shall be allotted to our component units and members?

I have purposely refrained from incorporating in this report any personal recommendations that I hold by reason of the years of contact with organizational work. I prefer to submit them when the Council takes up the discussion of these several problems.

THE JOURNAL

The journal during the year earned from advertising and subscriptions the following income:

Supscriptions and advertising sales	$13,008.23
Journal expense was	10,587.77
Leaving a net profit of	$2 420.46

As to its value, its contents and its standing, I am content to have these appraised by each number that has been issued. The editorial labor has been exacting and heavy. We feel repaid by the reception that has been accorded to these efforts.

For the information of the Council, I am pleased to report that commencing with the January issue four pages in each number will be devoted to Public Health Activities and this copy will be supplied by the State Commissioner of Health.

In the budget submitted provision is made to enlarge each number of The Journal by 20 pages this coming year.

The problem of editorship is submitted for your solution and instruction.

The publication committee has been very alert to its duties and I desire to record my personal appreciation to its members for the support and confidence they have manifested in your Editor.

CONCLUSION

With the submission of this report fourteen years of service is completed by your Secretary-Editor. I repeat, as I have done on several occasions during these years, that I am ever ready on an instant's notice to relinquish these duties. While on the other hand, if The Council expresses such a desire, I am willing to carry on as my abilities permit me to be of service. Medical problems, our State and County organizations and the interests of Michigan men have and will ever be for me a subject of interested concern. If I can enhance them, if I have served their elevation and have conserved their welfare, I shall by such appraisal feel repaid for the personal sacrifice contributed.

I am deeply grateful for the trust that has been imposed and the confidence expressed.

F. C. Warnshuis, M. D.

3. The points raised in the Secretary-Editor's Report were discussed and acted upon as follows:

LEGISLATION

4. The legislation problem was reviewed and discussed at length by all the members and by the following: Angus McLean, W. J. Stapleton, Davey, Marshall, Cobb, Gerlst and Senator Green.

On motion of Councilor Bruce-Corbus the following resolution was adopted:

Be It Resolved:

That the Council hereby instructs its Executives and the Legislative Committee to assume the following policies and procedures in dealing with all matters pertaining to medical legislation that may arise during the coming session of the Legislature:

(a) There shall be no paid lobbyist in Lansing.

(b) The Legislative Committee shall resort to all honorable means to educate and inform members of the legislature, relative to medical facts and requirements for the safeguarding of the public's health, calling upon members of the Council and component Societies to aid them.

(c) The Council directs the Legislative Committee to submit to the Executive Committee of the Council a plan of educational activity regarding medical legislation.

(d) It is recommended that the Legislative Committee consider the expediency of delegating to a lay representative the responsibility of appearing before all committee hearings of the legislature bearing upon medical legislation.

5. The Council adjourned for lunch at 1 p. m., and reconvened at 2 p. m.

BUDGET FOR 1925

6. The Secretary presented a budget to govern financial expenditures for 1925 as follows:

1925 PROPOSED BUDGET

MICHIGAN STATE MEDICAL SOCIETY

ESTIMATED INCOME—	
2,900 members, each $10.00	$29,000.00
EXPENDITURES—	
To Medical-Legal Committee, each $2.00 (2,900)	$ 5,800.00
To Journal Fund, each $2.50 (2,900)	7,250.00
Salary Executive Secretary	4,800.00
Expense, Executive Secretary (Traveling)	1,000.00
Stenographer	1,200.00
Rent, light, telephone	420.00
Annual Meeting Expense	500.00
Post-Graduate Clinical Meetings Joint Committee	5,000.00
Committee Expenses	1,000.00
Legislation Expenses	1,000.00
Printing and Postage and Office Supplies	450.00
Council Expense	500.00
Delegates to A. M. A. Expense	300.00
Total Budget	$29,220.00

(Apparent deficit will be overcome by receipt of dues from more than the estimated 2,900 members.)

JOURNAL BUDGET

RECEIPTS—		
Membership subscriptions	$ 7,250.00	
Miscellaneous subscriptions	200.00	
Advertising sales	6,000.00	
Total Receipts		$13,450.00

1925 ESTIMATED JOURNAL EXPENSE
(3,000 Copies)

Printing 92 pages per issue	$ 9,760.00
Postage and Mailing	300.00
Wrappers	225.00
Addressograph Changes	60.00
Salary Account and Editorial Expense	3,000.00
Reserve Fund for Extra Pages and possible special issues	500.00
	$13,845.00

1. Apparent deficit of $395.00 will be overcome by the small profit on reprint sales and by subscriptions in excess of 2,900.

2. This will provide for a 92 page Journal, each issue. We have been running from 64 to 76 pages with one of 92 pages. This budget provides for an increase of an average of twenty pages to each issue.

Moved by Councilor Baird-Ricker that the budget submitted be adopted. Carried.

Moved by MacKenzie-Greene that the following resolution be adopted:

Carried.

Resolved, That the expenditure of Society Funds shall be disbursed under the following restrictions:

1. Expenditures shall be charged to the respective funds set up in the Annual Budget as their disbursements indicate.

2. When a given Budget Fund is exhausted, no overdrafts shall be permitted on that fund.

3. There shall be no transfers of credit from one fund to another without the written joint approval of the Chairman of the Council and the Chairman of the Finance Committee.

4. Vouchers shall be signed as provided by our By-Laws.

Moved by Corbus-MacKenzie that expenses of speakers of our Post-Graduate Clinical Conferences be paid. Carried.

SECRETARY-EDITOR

7. Moved by Walker-Darling that the Executive Secretary discharge his duties under the direction of the Secretary-Editor and the Executive Committee of the Council. Carried.

ANNUAL MEETING

8. Moved by Randal-Burke that the Executive Committee be authorized to select the date for the Annual Meeting and that the details of local arrangements be supervised by the Secretary-Editor. Carried.

SECRETARIES' CONFERENCE

9. Moved by Ricker-MacKenzie that a conference of County Secretaries be authorized. Carried.

SECRETARY-EDITOR'S REPORT

10. Moved by Greene-Randall that the Secretary-Editor's report be accepted. Carried.

11. Councilor LeFevre arrived.

ANNUAL MEETING OF COUNCIL

12. Moved by Ricker-Burke that the Annual Meeting be held in Battle Creek in January and that the quorum present be instructed to adopt the proceedings of this Special and Pre-Annual Meeting. Carried.

COMMUNICATION FROM KENT COUNTY

13. Councilor Corbus presented a communication from the Board of Directors of the Kent County Medical Society. After discussion, Councilors Corbus-LeFevre moved that the following letter be sent:

December 12, 1924.

Dr. Homer T. Clay, Secretary,
Kent County Medical Society,
City.

Dear Mr. Clay:

I am authorized by the Council of the Michigan State Medical Society, in session in Detroit, December 11th, to present, through you, to the Board of Directors of the Kent County Medical Society, the following letter:

To the Board of Directors of the Kent County Medical Society.

Gentlemen:

The Council of the Michigan State Medical Society acknowledges the receipt of your communication requesting an interpretation of the Principles of Ethics of the American Medical Association in reference to certain publicity involving the Grand Rapids Clinic, exhibits of which are presented.

The Council feels that your guide in this matter should be the Principles of Ethics of the American Medical Association and the Follansbee Resolution passed by the House of Delegates at the last meeting of the A. M. A.

The Council does not deem it wise at this time, to consider or pass on the xhibits in this particular case. It feels justified, however, in calling your at-

tention to certain principles which are a part of and are to be found in the above mentioned reference.

First: The group or associated body of physicians is amenable to the same regulations and principles as is the individual physician.

Second: The fact that two or more physicians have formed a partnership, or group or clinic, does not grant to them special publicity privileges.

Third: The creation of a group or clinic does not convey unusual publicity privileges, even though part of their activities may be of a charitable type.

The Council recommends that your board, in exercising its duties, studiously seek to amicably solve its own disciplinary policies and problems.

Respectfully submitted by direction of the Council.

B. R. CORBUS,
Councillor Fifth District.

End. Follansbee Resolution,
Principles of Ethics of A. M. A.

ELECTION

14. Moved by Councilor Randall-Darling that F. C. Warnshuis be elected Secretary-Editor for the ensuing year. On vote the chairman declared the election.

TREASURER

15. On motion of Councilor LeFevre-Burke, Dr. Emmett Welsh was declared elected as Treasurer for the ensuing year.

On motion of LeFevre-Ricker an honorarium of $100 was authorized to be paid to the Treasurer.

16. President Clancy discussed some of the reciprocity and licensing features of our medical practice act for the information of the Council.

EXECUTIVE COMMITTEE

17. Moved by Darling-Walker that the minutes of the Executive Committee be approved and incorporated in the minutes of the Council. Carried.

18. Adjourned at 5 p. m.

ATTESTS F. C. Warnshuis,
Secretary.

Among Our Letters

NOTE.—*This department is the open forum of our members. Your communications and discussions are welcomed. Anonymous communications cannot be accepted, though at times names may be omitted by the Editor. Personalities will not be printed and responsibility for opinions is not assumed. We invite your interest in this department. Address: The Editor, Journal, Michigan State Medical Society, Powers Theatre Bldg., Grand Rapids, Mich.*

Editor The Journal:

Please advise me as to the procedures that govern the hearing of charges preferred against a member.

J. S. Brotherhood,
Chairman Board of Directors,
Kent County Medical Society.

REPLY

Dear Dr. Brotherhood:

Please be advised that the following is the procedure for the handling and hearing of charges preferred against any member of the County Medical Society:

1. Charges are made in writing, setting forth the allegations and signed by one or more members in good standing.

2. These charges are sent to the Secretary of the County Society, who presents them to the Chairman of the Board of Directors. The Chairman of the Board of Directors calls a meeting of the Board, advises them of the nature of the charges and against whom they are made.

3. The Board of Directors set a day for a hearing and notifies the accused that charges have been preferred against him, sends him a copy of the charges and notifies him that a hearing will be held on such and such a day at which time he will be afforded an opportunity to defend himself and refute the charges if he so desires.

4. At the date set for the hearing the entire Board Convenes and calls upon the plaintiff to present and substantiate his charges. Having done so, the accused is afforded an opportunity to refute them. Both plaintiff and accused having had opportunity to present their statements, they are excused and the Board of Directors reviews the statements and evidence and then determines:

(1) Charges are proven.
(2) Charges are not proven.
(3) The accused is or is not guilty.
(4) If guilty, that the penalty shall be censorship, suspension, expulsion.

5. Having reached its decision, the Board then prepares its report and submits it at a meeting of the Society. The President takes a vote to approve or disapprove the findings of the Board of Directors. If the Society votes to sustain the findings of the Board then the penalty imposed by the Board becomes effective.

6. If the accused feels that he has not had a fair trial he may appeal to the Council of the State Medical Society. The Council will proceed with a hearing and on the evidence and facts submitted will sustain or reverse the action of the local Society. Appeal may then be taken if the accused wishes to the Judicial Council of the American Medical Association, which is the final court of appeal.

7. The Board of Directors may appeal to the Councilor or the Council for instructions and advice before conducting a hearing.

8. The Councilor of the District is empowered to represent the Council and may employ his office to adjust the trouble or advise the Board of Directors and to exhaust every means before placing the matter before the entire Council.

F. C. Warnshuis, Secretary.

LEGISLATIVE RESPONSIBILITIES

Editor The Journal:

Since our conversation of November 20, I have given considerable thought to the policy contemplated, I understand, by the Michigan State Medical Society, of submitting to the state legislature a printed brief showing the dangers of quackery, and thereafter ignoring any efforts that quackery may make to install itself, in the form of a licensing board or licensing boards composed of quacks, as an integral part of the Government of Michigan. I have been unable, however, to reconcile such a course with the traditions of the medical profession. It seems to me too much like withholding from the people the benefits of the special knowledge pos-

sessed by the medical profession, and the medical profession alone.

I assume that the Michigan State Medical Society believes that quackery is a menace to public health, safety and morals; otherwise it would have no ground on which to file even the proposed brief. So long as the Society entertains that belief, every tradition of the medical profession, it seems to me, requires it to let the people have the benefit of the professional knowledge on which the belief is founded. The Society can hardly justify itself in presenting to the legislature simply a dignified, calm, dispassionate statement of facts, any better than it could justify a similar course in urging legislation for the protection of the people if it were the plague bacillus threatening them, and not merely the chiropractor, the naprapath, etc. At least, the burden of squaring its course with the traditions of the profession, in the one case as in the other, would be on the Society, and before embarking on the proposed course it might be well for the Society to set down in black and white the reasons that lead to it. Is the reason anything more than that the Sociey is tired of conducting biennial campaigns for the protection of the people, and of being abused by the very beneficiaries of such campaigns? If so, is that a sufficient justifiction for inaction? If the Society is relying on any other justification, how will it square inaction at the present time with its previous activities?

Of course, one must concede the legal right of the medical profession to withhold its aid. Its moral right to do so, however, is not so clear. No group of persons lose, by reason of being physicians, any of the obligations of good citizens to serve the people; and if the people as a mass need information that the medical group has, it seems to me to be the duty of the group to supply it if practicable. The fact that the legislature or some other agency of the people is not aware of its own need for such information increases, rather than decreases, the obligation of the group to supply it.

Unless the medical profession is ready to repudiate its supposed civic duty to protect the people with regard to matters of health, safety and morals —a duty incumbent on all good citizens—I can not see how the profession can single out for repudiation so much of that duty as relates to protecting the people against quackery. Persons who practice the healing arts have almost limitless opportunities for immorality of the worst kind, and must be fortified by the proper moral standards. Even if they be not deficient morally, but are simply ignorant and unskilled, they jeopardize the welfare of the people through the injuries they do in the course of their practice. These dangers are better known to the medical profession than to any other group. I can see no reason why the profession should ignore the danger, and abandon the people to their fate.

I doubt very much if anyone familiar with legislative matters would expect the suppression or the regulation of quackery to result from the mere submission of an unemotional, logical, printed statement of the dangers inherent in it. Such a statement is readily torn to pieces before a committee or in private conference with a legislator by any glib quack. Such a one can readily play on the lack of information of the average legislator, and upon the duplicity as well as the ignorance of any legislator eager for an excuse to vote in a way that will procure for him the support of a noisy, organized group—even a group of quacks. Such legislators can justify their votes in favor of quackery by the fact that the quacks have presented plausable arguments to offset statements in the printed brief of the medical profession, and that the medical profession failed to meet the issue.

After all, too, the enlightenment of the legislators is hardly sufficient to lead them to action. It may show them how they ought to act, but an impression on the feelings is ordinarily necessary to bring about action. And such an impression is hardly possible through a printed brief. It requires personal contact—the action of the voice, the expression of the eye, and essential emotional force in attitude and facial expression. The medical profession is, I believe, ordinarily apt to overstep the need for such appeals and the legitimacy of them.

It seems to me that the people of Michigan are entitled to the aid of the medical profession in preventing enlargement of quackery within the state. The fact that it is a disagreeable and exhausting task to afford such protection is in my judgment hardly a sufficient ground for inaction. Personally, I hope that the Michigan State Medical Society will continue to stand before the public as an active civic force in protecting the people against the evils of quackery in the treatment of the sick.

Sincerely yours,

Wm. C. Woodward, Executive Secretary,
Bureau of Legal Medicine and Legislation.

TONSILLECTOMIES

Editor of The Journal:

I read your article about operations in general and tonsillectomies in particular, with great interest.

I believe the only erroneous statement was in placing the number of unnecessary tonsillectomies at fifty per cent. It should have been ninety-nine plus per cent. Your article would have been considered rank heresy but a few years ago. While comparatively few physicians see the light, many of the reactionaries are becoming more vicious for some reason or other.

As an illustration, last week two mothers complained to me that their physicians refused further attention to their children unless tonsils were removed as had previously been recommended. The tonsils in these cases were of utmost vital importance to them in preserving their health. I might say that for the past few years I have taken a strong stand against tonsillectomy. Previously I was doing my share and had reached a point where I prided myself on the quality of the performance. Now I am convinced that tonsillectomy is far more serious than is generally recognized even by its opponents. This decision on my part has been reached as a result of a large clinical experience over eight or ten years. The possibility of clinical results through tonsillar treatment has been a revellation to me.

On the other hand I daily see the patients who are in a most deplorable condition due to tonsillectomy. These conditions go unrecognized and I believe exist by the hundreds of thousands the country over. Either I am crazy or the profession has much to be accounted for.

Personally, I have been exerting all my energy in an endeavor to offset this pernicious practice. Unfortunately, having no hospital of important professional connections my views will not carry weight like they otherwise would. This fact, combined with rather precarious health for the past few years, has deterred me from carrying out efforts along regularly recognized channels which might be worth while. Thank fortune I seem to be improving and trust I will be able to do my bit towards getting real facts on the tonsil situation.

An open minded attitude such as you display will help wonderfully in solving the problem.

Yours truly,
GEO. L. RENAUD.

Comment: All right—Any member further comment?—Editor.

The following letter will accompany 1925 membership certificate:

Editor The Journal:

1st. There is enclosed herewith your certificate of membership for 1925. Frame it and put it in a conspicuous place in your reception room. Let your patients know you belong to the Medical Society of the State and your County. This is not an idle honor; it certifies to your professional standing.

2nd. You are entitled to a copy of THE JOURNAL each month. THE JOURNAL is going to be bigger, better and a greater value to you. Be on the lookout for it. Read it and contribute to it.

3rd. Don't neglect your local County Society. Attend its meetings. Participate in its programs. Join your local officers in carrying out our new state-wide program of organized activity.

You are also eligible for Fellowship in the American Medical Association. Your national organization is active in your behalf. Join it by sending for an application blank. Lend it your support.

Remember this office is at your service. Command us when we can be of help.

F. C. Warnshuis, Secretary-Editor.
Harvey G. Smith, Executive Secretary.

Editor The Journal:

By an amendment to the Constitution of The Association of Military Surgeons adopted at the 32nd Annual Meeting at San Antonio, the Publications Committee is made to consist of a member from the Regular Corps and the Reserve respectively of the Army, the Navy and the Public Health Service and one member from the National Guard. I am directed by the President of the Association, Surgeon General Cumming, to inform you that you have been selected on the nomination of the Surgeon General of the Army to represent the Medical Reserve Corps of the Army on this Committee.

The duty of the members of the Publications Committee is to obtain articles of sufficient interest and value for publication in the journal of The Association, The Military Surgeon. We would be very glad to get an occasional short article in a lighter vein, reminiscences, anecdotes, etc., which have historical or personal interest.

Very sincerely yours,
J. R. Kean, Col., U. S. Army, Retired,
Secretary-Treasurer.

NOTE: Members of the Reserve Corps and those who saw service in the World War are requested to submit articles for publication. We also invite interest in the monthly publication—The Military Surgeon. The above association merits your membership affiliation and interest.—Editor.

State News Notes

COLLECTIONS

Physicians' Bills and Hospital Accounts collected anywhere in Michigan. H. C. VanAken, Lawyer, 309 Post Building, Battle Creek, Michigan. Reference any Bank in Battle Creek.

NURSES' private home, invites convalescents and invalids; best of care, fine location. R. Rs. N. Y. C. and Interurban; best of references given. For particulars write Bessie Bileth, 566 Ely Street, Allegan, Mich.

WANTED: Salaried Appointments for Class A Physicians in all branches of the Medical Profession. Let us put you in touch with the best man for your opening. Our nation-wide connections enable us to give superior service. Aznoe's National Physicians' Exchange, 30 North Michigan, Chicago. Established 1896. Member The Chicago Association of Commerce.

A PRACTICAL course in Standardized Physiotherapy, under auspices of Biophysical Research Dept. of Victor X-Ray Corporation, is now available to physicians. Offers a highly practical knowledge of all the fundamental principles that go to make up the standards of modern scientific physiotherapeutic work. Course requires one week's time. For further information apply to J. F. Wainwright, Registrar, 236 So. Robey St., Chicago, Ill.

Dr. Guy L. Connor of Detroit, has been selected as temporary Secretar yof the State Board of Registration in Medicine until a successor to Dr. Harison is elected.

A. Kuhlman & Company of Detroit, for many years a valued advertiser in the Journal, announces an opening of an uptown store located at 3919 John R. Street, Detroit. This branch surgical supply house will be in charge of Mr. R. Kelso and Henry Kuhlman, Jr.

Dr. Henry T. Holland of Quetta, India, was the guest of Dr. C. E. Beeman, Grand Rapids, during December. Dr. Beeman tendered a dinner to Dr. Holland at which the following guests listened to a discussion on cataracts by the guest of honod:

Henry T. Holland, M. D., Shikarpur, India; C. E. Beeman, M. D., D. Emmett Welch, M. D., W. W. Oliver, M. D., J. T. Auwers, M. D., J. D. Robertson, M. D., J. H. McRea, M. D., G. G. Towsley, M. D., P. T. Grant, M. D., J. G. Huizenga, M. D., J. R. Rogers, M. D., M. M. DeWar, M. D., E. W. E. Paterson, M. D., J. M. DeKraker, M. D., J. A. Heasley, M. D., E. D. Hunderman, M. D., Alfred Dean, M. D., Dean W. Meyers, M. D., Ann Arbor, Mich.; J. J. McDermott, M. D., St. Joseph, Mich.

Dr. William J. Mayo was the guest of the University Medical School on Friday, December 5th when he delivered the first lecture of the "Mayo Lectureship." He addressed a large audience, both medical and lay, on the subject, "The Physiology and Pathology of the Blood in Relation to Surgery."

Doctors George F. and Gladys H. Dick of the McCormick Institute for Infectious Diseases of Chicago, delivered the first of a series of lectures to be given under the auspices of Alpha Omega Alpha, national honoarry medical society, at the University of Michigan, Ann Arbor, December 4th. The Doctors Dick discussed the results of their research on scarlet fever, having been engaged in the study of this disease since 1916.

Dr. Slavko Pejich, a citizen of Jugoslavia and a fellow of the Division of Medical Education of the Rockefeller Foundation, is at present a student in the Department of Anatomy of the University of Michigan, pursuing microscopic anatomy.

Dr. John Sundwall, Director of the Department of Public Health at the University of Michigan, delivered the DeLamar Lecture at Johns Hopkins on Monday, December 1st. His subject was, "The Health Activities of a University."

Dr. W. Einthoven, Professor of Physiology at the University of Leyden, Holland and recipient of the Noble Prize in 1924, was the guest of Dr. F. N. Wilson of the University Medical School for several days. Dr. Einthoven spoke to the medical faculty and student body on the subject, "The Mechanism of Muscular Activity." He also addressed the Physics Faculty, discussing "The Uses of Microscopic Fibers."

Dr. George R. Herrmann of the Department of Internal Medicine, University of Michigan, recently gave a clinic and address before the Kalamazoo Academy of Medicine. He also spoke to the Genessee County Mdical Society on "Cardiac Diagnosis and Treatment."

At a recent meeting of the Board of Regents of the University, Mr. R. G. Greve's title was changed from Business Officer of the University Hospital to that of Associate Director of the University Hospital. Dr. John L. Garvey was made Chief Resident Physician of the University Hospital and Instructor in Neurology. Dr. Albert G. Kerlikowske, fomrerly of the Depratment of Ophthalmology, has been apopinted Assistant Chief Resident Physician of the University Hospital.

Dr. Ward Harryman and wife, of Detroit, left the latter part of December for a year's trip abroad. Dr. Harryman plans to spend the greater part of his time in Paris and London at the various neuropsychiatric clinics.

The fourth annual Beaumont Lectures under the auspices of the Wayne County Medical Society will be held on Monday and Tuesday, January 26th and 27th, 1925. Doctors Charles Mayo and W. A. Plummer will be the guests of honor this year. The first lecture of the series will be on Monday evening at 8 p. m., the second on Tuesday at 11 a. m., and the third on Tuesday at 8 p. m. The profession throughout the state is cordially invited to be present.

Dr. Don M. Campbell of Detroit is at present in Europe.

Dr. Geo. W. Crile gave an illuminating address on the newer problems of Gastro-intestinal Surgery before the Academy of Surgery of Detroit, at the December meeting held at the D. A. C. on Friday, Dcember 12, 1924.

Dr. and Mrs. T. P. Clifford, of Detroit, are the parents of a son, Thomas Percival, Jr., born during the latter part of November.

Dr. H. A. Reye, of Detroit, announces as an associate, Dr. Jas. F. McFadden. They will limit their practice to Neurology and Psychiatry.

Dr. and Mrs. E. D. King, of Detroit, are being congratulated on the birth of a son born in the early part of December.

Dr. F. J. Lee, Grand Rapids, is confined to bed by a serious illness.

The Legislative Committee held a meeting in Grand Rapids on December 18th and in Detroit, December 22nd, in conjunction with the Wayne County Legislative Committee.

On November 12th a Practitioners' Clinic was held at the University Hospital at which time a symposium on appendicitis was given. Dr. Haynes, director of the hospital, entertained the visiting Physicians at lunch.

Dr. Theophile Raphael of the Department of Psychiatry, at the State Psychopathic Hospital, Ann Arbor, has been promoted to the position of Assistant Professor of Psychiatry in the Medical School of the University of Michigan.

The American Board of Otolaryngology was organized in Chicago on November 10. The following constitute the board of directors: Doctors Harris P. Mosher, Boston, president; Frank R. Spencer, Boulder, Colo., vice president; Hanau W. Loeb, St. Louis, secretary and treasurer; Thomas E. Carmody, Denver; Joseph C. Beck, Chicago; Thomas H. Halsted, Syracuse, N. Y.; Robert C. Lynch, New Orleans; Burt R. Shurly, Detroit; Ross H. Skillern, Philadelphia; William P. Wherry, Omaha. The office of the Board is at 1402 South Grand Boulevard, St. Louis, Mo. The board comprises representatives of the five national otolaryngologic associations; the American Otological Society, the American Laryngological Association, the American Laryngological, Rhinological and Otological Society, the American Academy of Ophthalmology and Otolaryngology and the Section of Laryngology, Otology and Rhinology of the American Medical Association. The object of the association is to elevate the standard of otolaryngology, to familiarize the public with its aims and ideals, to protect the public against unqualified practitioners, to receive application for examination in otolaryngology, to conduct examinations of such applicants, to issue certificates of qualification in otolaryngology and to perform such duties as will advance the cause of otolaryngology. The first examination will be held at the time of the meeting of the American Medica lAssociation.

Dr. C. D. Brooks read a paper November 4th, to the Bay City Medical Society on the Management of Diseases of the Thyroid and its Association with Hypothyroidism.

The Rockefeller Institute for Medical Research has announced the release of the drug known as Tryparsamide for use in the treatment of human and animal trypanosomiasis (African sleeping sickness and mal de caderas) and selected cases of syphilis of the central nervous system. This action is based on results reported fro mclinical investigations which have been in progress for seevral years. The drug will be manufactured by the Powers-Weightam-Rosengarten Co. of Philadelphia, and will become available through teh regular trade channels about January 1, 1925. In releasing the drug for the benefit of the public, the Rockefeller Institute desires it to be known that the institute does not share in any way in profits that may be derived from the sale of the drug and that, with the cordial co-operation of the manufacturers, provision has been made for the maintenance of a schedule of prices on as low a basis as possible.

Dr. D. Emmett Welsh, Grand Rapids, will spend February and March in Florida and Mexico.

Dr. A. V. Wenger, Grand Rapids, is back on the job again following operation for acute appendicitis.

Dr. J. B. Whinery, Grand Rapids, has recovered from a severe attack of pneumonia.

Our sympathies are extended to Dr. G. L. LeFevre, of Muskegon, on the death of his sister, which occurred on December 9th.

Dr. R. C. Stone, Battle Creek, has recovered from his serious illness and is spending a few weeks in Arizona.

Dr. W. J. Mayo and Dr. Franklin H. Martin addressed a public evening meeting and the Rotary Club in Grand Rapids on December 5th.

Dr. W. J. Mayo addressed the faculty and students of the Medical Department of the University on December 5th.

OUR SOCIETY BUSINESS AND ACTIVITIES

HARVEY GEORGE SMITH
EXECUTIVE SECRETARY

NOTE: This Department will each month contain a discussion and report of our Society work and planed activities. Your interest and correspondence as to your problems is solicited.

PURPOSE, PLAN AND RESULTS OF COUNTY MEDICAL SOCIETY ACTIVITIES

What is a county medical society for- Obviously for the purpose of improving the work, results and education of its members.

How can these results be brought about? By a definite program which begins with the aims to be sought, systematizing the methods to be followed and a record of the results.

The plan of such action is no different from any plan that has for its purpose a constructive advancement. It is the same program as that which must be followed by the engineer, the architect, the builder, the chemist, the educator, the industrial promotor, the farmer, the mechanic—in fact, it is universal in its application to all human efforts.

First, then, what is the object of the plan of a County Medical Society program? Primarily, to better the work of the physician, to improve the conditions under which he performs that work, to achieve a maximum of results with a minimum of effort and to increase and broaden his opportunities for service.

This can be accomplished through patient and continued study, observation and research. The studying and the observing the physician must do himself. The opportunities for reasearch, investigation and comparison can be furnished by his society. He can then study through his society. He can compare through the same agency. His society can arrange for clinics and a systematic post-graduate study program. This program should consist of a well planned series of discussions and clinics which are related to each other and which effect directly the problems that the physician meets within his own county.

Included in this work should be a course of study in the history, present trend and future of scientific medicine. The physician should know, as is known in other professions, where his science comes from, the story of its development, the great principles and departures, and something of the story of its great leaders. He should be inspired and enlivened by the influence of those who have gone before him, by those who are living who are contributing something to the profession and he should be in touch and in true tune with the progress of the moment.

The responsibility of developing this program rests with the individual society. It will receive such encouragement and help as the State Society can offer, but the actual working out of programs must come from within the County Society itself.

In this program there should be included a discussion of the particular needs of the community which the members aim to serve. Problems differ in different localities. The County Society should be informed of the general health conditions of the county, where it is weak, where it is strong, where and how health conditions may be improved. It should seek, and will be so aided by the State Society, educators as are best fitted to enlighten the members as to their particular and peculiar problems.

One outstanding, almost universal, need in every locality is a higher and a more firmly established public confidence in scientific medicine. That can be brough about through the co-operation of the physicians and with the aid of their County Societies. To do that, it is necessary that all the physicians in the county seek to attain a uniformly high standard of efficiency. It means

that where one or two or three men, who have unjustly been criticised, are suffering from such criticisms, the society come to their help, either through a general defense or through such assistance as they may require in the way of scientific knowledge.

This program should contemplate the organization of a solid front against ineffective remedies and unproven theories in the treatment of human ills. It should extend beyond the confines of the society itself and reach out into the highways and byways of life. It should take in every phase of life which bears on human happiness where health and physical comfort are concerned. Through this program the physician should have the opportunity to study proposed and established legislation bearing upon health subjects and their application to his community.

Included in this program should be a continued and businesslike effort to increase the membership and general usefulness of the society to the county of which it is a part. The society should become a recognized and accepted authority on health requirements to which the public will gladly turn in time of need.

This program should promote the social relations between the physicians and their families. It should arrange for stated social activities, lectures on popular health subjects, health talks for children, in the factories and for the dissemination of such knowledge of health as may especially be required by the agrarian members of the community. It should lend its aid to the safety program of the county and state and work in close touch and harmony with established institutions which have a legitimate and constructive position in economic and social life.

It must be seen that wherever a county medical society can be made to function along the above lines, it must of necesity open up a larger and more lucrative field for the individual physician member. It will increase his opportunities to be of service and to make that service more effective. It will bring him in closer touch with the public, his patients and future patients. The net result aside from the general good that will acrue to the county, will be that scientific medicine will earn and receive a more hearty public support, which will reflect, in turn, upon every individual member of the county society.

A COUNTY SOCIETY METHOD FOR ACTION

Who is to accomplish these aims and objects? The officers, committees and the members operating.

Steps to be followed:

1. A general meeting (where possible) of all the members of the Society is called by the officers or Secretary. This meeting may be one of the regular meetings of the Society.

2. The County Society Secretary should present this project or a similar one for discussion and for direction as to what the membership wishes for one year.

3. The members should give authority to the program committees and other committees to carry out their desires.

4. The program committee and other committees should meet and organize work according to instructions to cover six month or more of activity.

5. The program committee develops a program of work by selecting definite and related subjects and speakers in so far as possible and as directed by the membership.

(The committee should keep in mind that local talent should have a part in the year's activities by appearing on the program not less than twice in a series of twelve meetings. If a local society membership does not accept this responsibility, interest in the work of the Society will lag.

6. The Committee obtains the approval of speakers for programs as arranged. When approval is obtained, the membership should be notified at least two programs in advance and special notices should be sent out a few days in advance of each meeting. The membership should be notified at once as soon as speakers and plans are made so that the work of the committee and the work of the Society may become a reality in the minds of the members. This helps to keep the Society active, helps it to assume responsibility and helps it to progres. (The Committee, or the Society Secretary, may send out the notices. Some one must be responsible for this very important duty and see that it is done in due time and with emphasis.) The Committee should emphasize promptness in starting programs. Delays, tardiness and excuses destroy interest, and in consequence, results.

7. The Committee should work out a broad fellowship plan through which the members will use the informal salutation when meeting among themselves. John, George, Henry, Tom, Bill, etc., mean hospitality and friendship. Business organizations have used this form of address for a long time. It is worth trying.

8. The Secretary should write a full report of each meeting, noting the points that made the meeting successful, or those that caused it to be a failure. All special features should be noted which give or have given

life and interest to the programs and to other accomplishments. As soon as the reports are written, copies should be sent to The State Journal.

The Secretary should always keep the Michigan State Medical Society informed of the programs developed. The Michigan State Medical Society should be placed on the mailing list of the County Society so that meeting notices are received regularly.

All Secretaries are earnestly requested to try this plan in their respective societies and report progress to the local membership and to the State Society.

Let us act now this first month of the new year.

CALHOUN COUNTY MEDICAL SOCIETY ANNUAL REPORT

The Calhoun Countf Medical Society during the year 1924 has made progress and has written this progress in a report of exemplary character. An analysis of this report indicates clearly that results were accomplished by good organization with a good program committee and with the members of the Society assuming responsibility for their own society. "For the first time in several years have the members actively participated in the programs" has in part resulted for the increased activity, the increased interest and the increased attendance. An increase in the attendance of 65.8 per cent at the dinners and 35.5 per cent at the meetings means that work has been done, co-operation has been secured and every member has assumed his responsibility for his own interest and for his profession in general. Friendship is the motto read between the lines of this report:

THE COUNTY MEDICAL SOCIETY REPORTS FOR 1924 AND 1925

The statistical study of the County Medical Societies of the State of Michigan shows that reports by months have been submitted to the State Journal as follows:

January	5 counties reported
February	7 counties reported
March	8 counties reported
April	3 counties reported
May	2 counties reported
June	4 counties reported
July	5 counties reported
August	4 counties reported
September	1 county reported
October	2 counties reported
November	4 counties reported
December	6 counties reported
Total	51 reports from 20 counties.

Hougthon County	9 reports
Ionia-Mantcalm County	6 reports
Genesee County	5 reports
Calhoun County	5 reports
Gratiot-Isabella County	4 reports
Hillsdale County	3 reports
Ingham County	3 reports
St. Clair County	2 reports
Gogebic County	1 report
Bay County	1 report
Berrien County	1 report
Clinton County	1 report
Jackson County	1 report
Kalamafioo County	1 report
Kent County	1 report
Monroe County	1 report
Newakgo County	1 report
Sanilac County	1 report
St. Joseph County	1 report
Washtenaw County	1 report
Total	51 reports by 20 counties.

As County Medical Societies we are at the beginning of a new year—a new year for recording our accomplishments, informing our neighboring counties throughout the state of our activities, and our methods. We are at the place in our history where a record is important to the advancement and progress of medicine in each and every county. Report your meetings regularly and report what you are doing as an organization. The year just finished gives all the County Medical Societies, 56 in number, a total of only 51 reports made by only 20 counties. Houghton County, of the Northern Peninsula, leads all others by reporting nine different times and Ionia-Montcalm is second and leads the Southern Peninsula.

This record does not tell the whole story of what the County Medical Societies are doing. There are a number of societies in addition to those that have reported that have kept records and nearly every society has done something. In addition to this Wayne County, which holds regular weekly meetings and issued its own weekly bulletin is not included in the above record. We recognize the splendid accomplishments of this active society which is by many times the largest of all the County Societies. Little or much has been accomplished and written, in proportion to the interest in the profession, the friendship among the physicians and the intenseness of desire in the various societies. The year 1924 is finished and past. We are at the beginning of a new year. We have our profession with us and we intend to keep it ours. Our resolution for this year should be to record our activities, the activities of 56 County Societies representing 13 councilor districts and more than twenty-nine hundred doctors. Secretaries, we know you are busy in your profession, but we know that we cannot advance without a record. Immediately after your meetings or while at the meeting take a few minutes and write your story of what your society has done. Remember there are 55 other secretaries representing 55 other County So-

cieties doing the same thing and that the medical profession of these 55 counties wants to know what the physicians of the neighboring counties and counties throughout the state are doing. Other states may or may not have better records than ours just closed. We do not know. One thing is certain and that is that if we fulfill our resolution, do our duty to our profession in our State of Michigan, we will have the history of accomplishment to our credit when the last day of 1925 bids us goodnight. Let us be off.

CALHOUN COUNTY SECRETARY'S REPORT

In retrospect the year just brought to a close has been most satisfactory. The program committee, consisting of Doctors George Hartford, R. D. Sleight, and M. A. Mortenson, is to be especially congratulated on the varied type of program. For the first time in several years the members of the Society actively participated in the programs, case reports having been given by Doctors Sharp, George Hafford, E. Van Camp, Gertrude Johnson, L. V. Stegman, J. R. Jeffrey, Verity, Squier, Riley, Fraser, Colver, Serio, and Henderson. Dr. Hubley gave a paper on Insulin. Papers were given by four out of twon doctors. Dr. C. J. Darling, of Ann Arbor, talked on "The Spleen"; Dr. Earl Smith, of Grand Rapids, gave a paper on the "Comparative Study of Dental and Dermatological Problems"; Dr. Dean Loree, of Ann Arbor, spoke of "Hospital Standardization"; and Dr. W. H. Marshall, of Flint, discussed "Tubersulosis in Children." Meetings were held at four different institutions in the county during the year. The Roosevelt American Legion Hospital, Battle Creek Sanitarium, Calhoun County Public Hospital, and the Sheldon Memorial Hospital of Albion, were visited in turn. On June 2nd, Doctors Sleight and Haughey entertained the members at the cottage of the former at Goguac Lake.

At the meeting a dinner preceded the regular session, with an attendance of 33, 38, 51, 20, 66, 34, 15, 60, and 46, while at the meetings the attendance was 42, 52, 51, 31, 79, 34, 17, 60, and 53. The average attendance at the dinners was 40.3 and at the meetings 46.5. Compared with last year, this is a decided improvement, the gain in attendance being 65.8 per cent for the dinners and 35.5 per cent for the meetings.

Nine new members have poined the Society during the past year, an dfive applications are awaiting action. Death claimed one active member of the Society, Dr. W. C. Henderson, who died March 27th; one honorary member, Dr. Leon M. Gillette, who died April 16th; and one former member, Dr. H. E. Lennon, of Bellevue, who died April 14th. Five memberships have beel allowed to lapse and the year closes with a total membership of 95.

Respectfully submitted,
Theodore L. Squier,
Secretary.

Deaths

Whereas, Providence has removed from our midst our esteemed and beloved friend and counselor, Dr. J. E. Scallon, an honored member of this Society and Dean of the Profession of the Copper Country; and,

Whereas, We feel keenly his loss, collectively and individually; therefore be it,

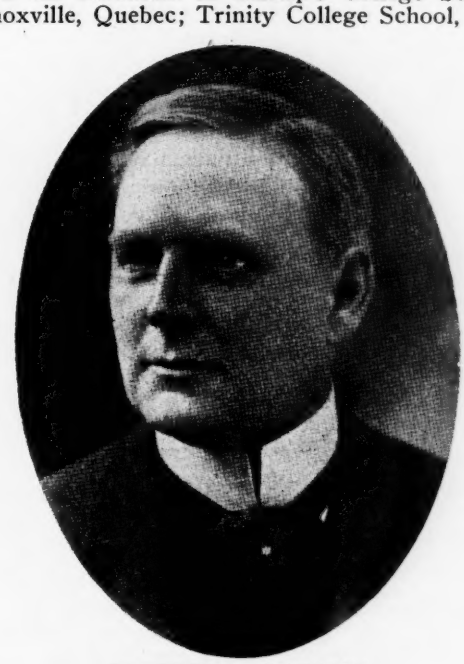
Resolved, That we, the members of the Houghton County Medical Society, extend our deepest sympathy and sorrow to the bereaved family; and be it further,

Resolved, That a copy of these resolutions be forwarded to the immediate family, and be it further,

Resolved, That these resolutions be spread upon the minutes of the Society, and a copy forwarded to the Michigan State Medical Society for publication.

A. D. ALDRICH,
ALFRED LA BINE,
SIMON LEVIN,
Committee.

Dr. Beverly Drake Harison died December 6, 1924, in the Battle Creek Sanitarium. Dr. Harrison was born in Canton, N. Y., May 8, 1855. He received his education in Bishop's College School, Lennoxville, Quebec; Trinity College School, Port



BEVEREY D. HARISON

Hope, Ontario; Trinity College (A. B.), Toronto; University of Toronto (M. B. 1882); University of Toronto (M. D. 1901); and University of Michigan (A. M. Hon. 1910). He began practice in Ontario and came to Saulte Ste Marie, Michigan, in 1888, where he remained until he moved to Detroit in

1906. He married Miss Josephine Lister, October 9, 1889.

Dr. Harison was a member of the American Medical Association, Michigan State Medical Society (ex-president), Wayne County Medical Society, American College of Physicians, Captain in the Medical Corps during the World War, the Detroit Army and Navy Club, and Sault Ste. Marie Country Club.

The Doctor was nationally known as the Father of Medical Legislation; he was the first and only Secretary of the Michigan State Medical Board of Registration in Medicine; he was at one time President of the State Hospital Board at Newberry; and he was organizer and secretary of the American Conference of Reciprocating State Medical Boards. His death will be a very great loss to the public as well as to the medical profession of this county.

Besides his widow, Mrs. Josephine Lister Harrison, he leaves one daughter, Miss Frances Lister Harison. The doctor was buried in the family lot in Toronto, Ontario.

Resolved, That the Michigan State Board of Registration in Medicine, in the death of Dr. Beverly Drake Harison, desires to record its appreciation and recognition of his twenty-five years of faithful and efficient service, not only to the Board, but also to the cause of higher and ideal qualifications for the practice of medicine in Michigan and in the other states of the Union.

As the administrator of the detail involving the standards of preliminary and medical education, his services have been most thorough and exact, and in addition, they have been creative, the result of which has been recognized by other boards and by other states. While the methods involved in these advances meant greatly increased labor and responsibility, this did not in the least affect Dr. Harison's attitude towards the ideal sought or the difficulties encountered.

Covering all of Dr. Harison's service in the efficient conduct of an educational office in its relation to the student body, to the medical profession and to the public, he brought to bear a very sound and mature judgment coupled with a high degree of intelligence and culture. With these attainments there was no avenue of least resistence in his activities. He stood ready at all times and under all circumstances to sacrifice time and health in carrying out efficiently the duties of his office. The history of the progress of medicine in Michigan would be incomplete without a record of Dr. Harison's services.

The Board feels that the above expression of appreciation very feebly voices its esteem and regret upon Dr. Harrison's death.

GEORGE L. LE FEVRE, President.
GUY L. CONNOR, Secretary.

County Society News

BAY COUNTY

The annual meeting was held Monday evening, December 8th at the Kawkawlin Community Church. The members were guests of the retiring president, Dr. Paul R. Urmston, at a venison dinner, prepared by the church ladies and served by the physicians' wives. About 40 members were present.

Talks were given by Dr. Urmston and Dr. Bishop, of Portland, Ore., formerly of Bay City.

The reports of officers and committees reviewed a very interesting year and showed the society to b in a prosprous condition.

The annual election gave the following results:

President, Dr. C. A. Traphagen; Vice-President, Dr. V. A. Dumond; Secretary-Treasurer, Dr. L. Fernald Foster; Medico Legal Com., Dr. A. W. Herrick.

Delegates to State Meeting:
Dr. C. H. Baker, Dr. C. A. Stewart.
Alternates:
Dr. M. Slattery, Dr. D. F. Smith.

L. Fernald Foster, Secretary.

GRATIOT-ISABELLA-CLARE COUNTY

The November meeting of the Gratiot-Isabella-Clare County Medical Society was held in the Alma City Hall, Thursday evening, November 13. One out of town speaker was Dr. E. L. Eggleston of Battle Creek, who spoke on Diseases of the Upper Right Quadrant. The doctor talked for two hours from slides made from cases he had seen, which made the subject very interesting. There were many expressions afterward from members that this was a very profitable meeting.

The annual business meeting of the Gratiot-Isabella-Clare Medical Society was held in Alma. December 12th. The annual report of the Secretary was read and accepted, after which the following were elected officers for 1925:

President, C. D. Pullen, Mt. Pleasant; Vice-President, M. J. Budge, Ithaca; Secretary-Treasurer, E. M. Highfield, Riverdale.

The members and their wives then met at the Wright House for the annual banquet. Twenty-nine sat down to prettily decorated tables. After all had enjoyed the eats, President Smith introduced President H. M. Crooks of Alma College, who gave an exceedingly interesting talk, which would have to be heard to be appreciated.

E. M. Highfield, Secretary.

KALAMAZOO-ALLEGAN-VAN BUREN COUNTIES

Rport of the Budget Committee:

Your committee, respectfully submits the following estimated budget for 1925:

State Society Dues	$1,200.00
Guests	75.00
Postage and Stationary	50.00
Bulletins	150.00
Telephone and Telegraph	75.00
Flowers	25.00
Lights	6.00
Janitor and Cleaning	50.00
Stenographer	50.00
Sundries	44.00
Total	$1,725.00

F. C. Penoyer,
C. L. Bennett,
Malcolm Smith.

Secretary's Report:

The annual meeting of the Kalamazoo Academy of Medicine marks the completion of forty-one years of activity as an incorporated society. In this connection, it might be well to note that of the original csharter members of the Academy, Dr. C. H. McKain of Vicksburg is the only surviving member. As we all know, Dr. McKain is still very actively engaged in the practice of medicine and during all these years he has retained his membership and interest in the academy. We believe Wr. McKain is to be congratulated and our best wishes are extended to him.

For the first time in a number of years the number of meetings held for the year has been limited to ten. This reduction has resulted because of the monthly meetings of the various hospital staffs. What results the multiplying of medical meetings will ultimately have upon the County Society is a debated question. But, it should be remembered that the academy has a definite position to fill and a definite functino to perform, and that no other organization can take its place. Let no oen shirk his duty as regards his membership in the Academy and attendance at its meetings.

Of the ten meetings held during the year, eight were held in Kalamazoo, one in South Haven and one in Vicksburg. We believe it a wise plan for a somewhat similar plan to be followed in the future.

There were three clinics held during the year. All of these were well attendd.

It is quite apparent that this type of meeting is popular with the membership of the academy as a whole and the clinical program committee is to be commended for their work in arranging these clinics.

Our Program Committee also desires its share of approbation for its work during the year. It has succeeded uniformly in arranging scientific programs of intense practical interest. We cannot help but repeat what has been said often enough, that those who fail to avail themselves of the opportunities extended at these meetings miss a most excellent post graduate course in medicine.

During th year the academy mourned the loss of two of its most faithful and honored members—Dr. W. A. Stone of Kalamazoo and Dr. G. D. Carnes of South Haven. Both Dr. Stone and Dr. Carnes at one time during theil long membership in the academy served as its president.

Having completed our three years terms of office, your Secretary's swan song is more or less in order. We should like to take the opportunity at this time to thank the various officers and members for their co-operation. Our relations have been most pleasant and we, at least, have profited thereby.

As we retire, our one regret is that apparently all attempts to arouse an interest in increased attendance have been unavailing. Our figures show that attendance figures now average practically the same as those of three years ago. We believe this is the biggest problem the academy ha sto face and our hope is that some soultion may be found speedily.

IONIA-MONTCALM COUNTY

The annual meeting of the Ionia-Montcalm Medical Society was held Thursday evening, December 11th, at the Ionia State Hospital, Ionia, Mich.

Through the courtesy of Robert H. Haskell twenty members were given an excellent dinner which was followed by a clinical program, presented by the Medical Staff of the hospital.

The meeting was called to order after dinner by President A. J. Bower, and the following officers elected for the coming year:

President, Dr. Jos. T. Pinkham, Belding, Mich; vice-president, Dr. Isaac S. Lilly, Stanton, Mich; secretary and Treasurer, Dr. F. A. Johnson, Greenville, Mich.; delegates to State Society, Dr. C. H. Peabody, Lake Odessa, Mich.; alternate, Dr. Perry C. Robertson, Ionia, Mich.

It was voted unanimously to increase the county dues from three dollars to four dollars a year, which with the state dues of ten dollars makes the dues a total of fourteen dollars a year.

Following the election of officers Dr. Sedgwick presented a paper, "The Use of Foreign Proteid Injections in Cornea Ulcers," which was well received.

Three cases were reported and the patients were presente dto the society for examination, which demonstrated the perfect results secured by the treatments. F. A. JOHNSON, Secretary.

HOUGHTON COUNTY

The Houghton County Medical Society held its regular monthly meeting at the Douglas House, Tuesday, December 2, with 14 members present.

The first paper of the evening was "Some Aspects of Antitoxin Administration," by Dr. A. D. Aldrich of Houghton, he having had a diphtheria epidemic at Winona, Mich., during the past summer, having a total of 36 cases and only one death. His personal experience of antitoxin were especially interesting and show the necessity of giving larger immunizing doses. This paper was fully discussed by all present.

The next paper, "Typhoid Immunization," was read by Dr. M. D. Roberts. Dr. Roberts has given several hundred shots of United States army typhoid vaccine to the Naval Reserves of this district. He gave a very full discussion of the technic, reaction and immunity which this vaccine conferred. This paper was also fully discussed by all present.

One of our oldest and most highly respected members, Dean of the St. Joseph's Hospital Staff, and the oldest member of the medical profession in Houghton County, has been removed by death, November 9th. Dr. Scallon was always a very active man in the Society and medical circles of this district, and he will be greatly missed for his counsel and advice. A copy of the resolutions passed by the Houghton County Medical Society are inclosed.

The next regular monthly meeting of the Houghton County Medical Society will be held in Calumet at which time the annual election of officers takes place. All members are urged to be present.

Yours very truly,
G. C. STEWART, Secretary.

OAKLAND COUNTY

Oakland County Medical Society, held a dinner meeting at Caribou Inn, Clarkston, Mich., December 12th, 6:30 p. m., at which time we were addressed by Dr. F. B. Walker, Councillor for our district and by our new executive secretary. Dr. Walker told us of how our money is being spent, also of future plans as outlined by council of the Society.

The Society went on record as favoring an increase in dues and an aggressive legislative policy.

Leon F. Cobb, Secretary.

Among the Books

A Review and Frank Appraisal of Medical Books That are Proffered to the Profession by Publishers.

A TEXT-BOOK OF PATHOLOGL: William G. MacCallum, M. D. Third edition, thoroughly revised. Octavo volue of 1162 pages with 575 original illustrations. Cloth, $10.00 net. W. B. Saunders Co., Philadelphia and London.

In this book, which represents in its order and contents the course in Pathology given in the

second year to the students of the College of Physicians and Surgeons, an effort has been made to discuss the general principles of Pathology as illustrated by a study of the commoner and more important diseases.

It is therefore in no sense intended as a book of reference. No attempt has been made to describe systematically all the diseased conditions which may occur in each organ, and for that reason there is no division into general and special pathology. Instead the whole is constructed upon the idea that all pathological disturbances are the result of some form of injury, or of the immediate or more remote reactions of the body to injury. It has been found possible to carry out this conception quite logically except when, as in the case of tumors, we are quite ignorant of the causes of the disease. For that reason, after a few chapters devoted to the general working principles with illustrations from the most common conditions, the rest of the book is divided into chapters which deal with various types of injury and their immediate and remote effects. The discussion of tumors necessarily forms a separate part, since they seem to be so little controlled by the laws which govern other pathological processes.

The whole book is planned therefore to discuss as far as possible upon the basis of etiology, and the usual subdivision of the material according to its anatomical distribution has not been employed. Nevertheless the index is so arranged as to facilitate reference to lesions of the heart, lungs, etc.

Partly bcause of lack of space, but chiefly because they are admirably treated in great detail in books easil yaccessible to students, several whole sections usually included in books on pathology have been omitted. This is true of the relations of heredity to disease, of the biology of bacteria and other parasites, of malformations, and of many diseases of the nervous system. The whole subject of resistance and immunity is touched upon only in the briefest way. Nevertheless, even though such subjects are intentionally omitted, it is realized that criticism may well be offered when it is found that the diseases chosen to illustrate the principles of pathology do not include many important affections, such as multiple sclerosis, progressive muscular atrophy, rabies, yellow fever, and a host of others.

In discussing the prominent types of injury an attempt has been made to give an impression of the far-reaching interdependence of pathological conditions by making a continuous story of the whole with numerous digressions for the description of special lesions or their causes. Several chapters ared evoted to the results of obstruction of the flow of contents of hollow organs, and while it may seem that this i sa rather forced arrangement the type of injury is one whose effects depend in each instance upon certain common principles.

A constant effort has been made to speak of the disturbances of function and of chemical interchange in the course of disease, as far as that was possible, and even to describe symptoms. If this makes the book seem like a treatise on clinical medicine, it is only because pathology and clinical medicine are, afte rall, the same thing viewed fros slightly different angles.

References to the literature given with each chapter have been chosen, as far as possible, to direct the student to readable and comprehensive papers which review the subject and give further and moer complete references.

PHYSICAL DIAGNOSIS: W. D. Rose, M. D. Price $8.50. C. V. Mosby Co., St. Louis, Mo.

This is a fourth edition of a satisfactory text that rates well with other discussions on physical diagnosis. Well written, clearly illustrated and arranged for quick reference, it serves satisfactorily in presenting all essentials.

THE CHILD'S HEALTH LIBRARY: R. K. Haas, Inc., 218 W. 40 St., New York.

The books were written by a group of prominent pediatrists and social workers in New York City, and are prefaced with an Introduction by Dr. Haven Emerson.

The purpose of the series is to teach parents how to co-operate with the physician in promoting and preserving the health of the child. We believe that no such comprehensive survey of the entire subject of Child Health has ever been prepared for the benefit of parents. ,

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DISEASES OF THE HEART: Dr. Henri Vayuez, Professor of the Faculty of Medicine of Paris. Octavo volume of 743 pages, illustrated. Cloth, $8.50 net. W. B. Saunders Co., Philadelphia and London.

This text, translated, was written by the foremost cardiologist of France. It is rich in radioscopic studies. It llill be appreciated by American Clinicians.

THE PRACTICE OF PEDIATRICE: Charles G. Kerley, M. D. and Gaylord W. Graves, M. D. Third edition, revised and reset. Octavo of 922 pages, 150 illustrations. Cloth $9.00 net. W. B. Saunders Co., Philadelphia and London.

Reffritten, cith additional material and revised to date, this text becomes a satisfactory guide and teacher as uell as asthority.

A LABORATORY GUIDE IN HISTORY: Leslie B. Arey, Ph. D. Second Edition, revised. 12 mo. of 96 pages. Cloth, $1.25 net. W. B. Saunders Co., Philadelphia and London.

Received and commended.

MANUAL OF PSYCHIATRY: Paul E. Bowers, M. D., Examiner in Lunacy. Octavo volume of 365 pages. Cloth $3.50 net. W. B. Saunders Co., Philadelphia.

We find in thi stext a comprehensive outline of the field of psychiatry. It is set forth in an authentic manner and is void of theoretical conjections or speculationh.

ABT'S PEDIATRICS: Edited by Isaac A. Abt, M. D. Set complete in eight octavo volumes totalling 8,000 pages with 1,500 illustrations, and separate Index Volume free. Volume V containing 865 pages with 373 illustrations. Cloth, $10.00 per volume. W. B. Saunders Co., Philadelphia and Londan.

This volume includes: Diseases of the face and jafs, orthopedics, paralyses, and the infectious diseases. In every detail it formulates the most modern informatio nand authority upon these subjects. As we have previously commented, this series is the peer of pediatrics of the present day.

THE MEDICAL CLINICS OF NORTH AMERICA. Octavo of 324 pages and 29 illustrations. Paper $12.00: Cloth $16.00 net. W. B. Saunders Co., Philadelphia and London.

,Of established interest and standard.

MANUAL OF OBSTETRICS: John Cooke Hirst, M. D. Second Edition Reset. 12 mo. of 551 pages with 229 illustrations. Cloth, $4.50 net. W. B. Saunders Co., Philadelphia and London.

This manual is a companion to the author's manual of gynecology. It presents the subject clearly and with unprofitable discussion omitted. The plan of treatment and technic is baised on experience and tested practice. It is a manual that emphasizes the need of modern obstetrics and is authoritative in detail.